USSR UDC [621.377.622.25-181.48:621.382.323-416].003.13

SKVORTSOV, A. M., ZARETSKIY, I. L., and NORKIN, L. M.

"Some Economic Problems of Planning, Designing, and Manufacturing Large Integrated Circuits from MOS-Transistors for Storage Devices"

Elektron. tekhnika Nauch.-tekhn. sb. Mikroelektronika (Electronic Engineering. Scientific and Technical Collection. Microelectronics), 1970, vyp. 5 (26), pp 183-185 (from RZh-Avtomatika, Telemekhanika i Vychislitel'naya Tekhnika, No 6, Jun 71, Abstract No 6 B346)

Translation: A comparative estimate of the cost of various types of semiconducting memories is presented. The cost of the circuit as a whole and the specific cost calculated per binary unit are investigated. The results of this estimate are presented for a memory of different capacity made of MOS-transistors and also for devices with a capacity of 1,000 bits executed in the form of large integrated circuits based on single crystals and mosaic integrated circuits using a montage by the inverted crystal method. It is demonstrated that on the modern level of development of technology, the specific cost of mosaic integrated circuits is 35 times less than that of large integrated circuits of the same capacity. There are illustrations and a 5-entry bibliography.

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USSR

UDC 624.07:534.1

ZARETSKIY, L. B.

"Computer Study of the Dynamics of Impact-Oscillatory Systems With One Degree of Freedom"

Tr. VNII stroit. i dor. mashinostr. (Works of the All-Union Scientific Research Institute of Construction and Road Machine Building), 1972, No. 58, pp 81-89 (from RZh-Mekhanika, No 3, Mar 73, Abstract No 3V286)

Translation: A block diagram of an algorithm for obtaining a point representation, the study of which reduces to the study of the simplest shock-oscillatory system, is described. The structure of the algorithm is independent of the specific form of the system since it can be applied in the solution of a wide range of problems in the dynamics of shock-vibration machines. Computer data pertaining to the structure of periodic regimes and to the stability of working regimes under random variations in the parameters are given as an example. 10 ref. Author's abstract.

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USSR

UDC: 51

ZARETSKIY, L. S.

"Methods of Determination of Unknown Parameters of Production Processes at Milk Industry Enterprises"

Tr. VNII Moloch. Prom-sti [Works of All-union Scientific Research Institute of the Milk Industry], No 28, pp 14-17 (Translated from Referativnyy Zhurnal Kibernetika, No 11, 1972, Abstract No 11V494, by the authors)

Translation: Methods of determination of production activity indicators for an enterprise are studied when the indicators are not known at the moment of decision making. Various methods of construction of prediction functions are presented.

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USSR UDC: 51

ZARETSKIY, L. S., KARPILOVSKIY, Ye. B., KHALEPSKIY, L. D.

"Planning of Production Activity of Milk Industry Enterprises Using Mathematical Economics Methods"

Tr. VNII Moloch. Prom-sti [Works of All-union Scientific Research Institute of the Milk Industry], No 28, pp 17-23 (Translated from Referativnyy Zhurnal Kibernetika, No 11, 1972, Abstract No 11V495, by the authors)

Translation: A method is studied for construction of a mathematical model of a milk plant. The task of operative planning of the plant using dynamic programming is stated. The necessary recurrent relationships are produced.

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USSR

UDC 51

ZARETSKIY, L. S., KARPILOVSKIY, Ye. B., KHALEPSKIY, L. D.

"Planning of the Production Activity of Enterprises of the Dairy Industry Using Methods of Mathematical Economics"

Tr. VNII moloch. prom-sti. (Works of the All-Union Scientific Research Institute of the Dairy Industry), 1972, No. 28, pp 17-23 (from RZh-Matematika, No 11, Nov 72, Abstract No 11V495)

Translation: A technique for constructing a mathematical model of a dairy plant is discussed. The problem of operational control of the plant using dynamic programming is formulated. The necessary recurrence relationships are derived. Authors abstract.

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Acc. Nr.: AN0107433 Ref. Code: UR9027

AUTHOR-- ZARETSKIY, R.

TITLE-- MACHINE TOOLS ARE CONTROLLED BY "WIND"

NEWSPAPER-- VECHERNYAYA MOSKVA, MAY 25, 1970, P 2, COLS 3-8

ABSTRACT-- AFTER ALMOST THREE YEARS OF RESEARCH, THE INSTITUTE FOR CONTROL PROBLEMS OF THE SOVIET ACADEMY OF SCIENCES AND THE "TIZPRIBOR" PLANT HAVE DEVELOPED A FLUIDICS-BASED CYBERNETIC DEVICE FOR CONTROLLING MACHINE TOOLS. THE DEVICE WAS DEMONSTRATED TO THE AUTHOR BY PETR MATVEYEVICH ATLAS, CHIEF DESIGNER OF THE PLANT.

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19890504

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USSR

UDC 669.715'721:620.193.4:621.785

KASSYURA, V. P., and ZARETSKIY, YE. M.

"Effect of Welding and Heat Treatment on Electrochemical Characteristics of AMg6M Alloy"

Dokl. XXX Nauchno-tekhn. konferentsii Mosk. in-t khim. mashinostr. (Papers Presented at Thirtieth Scientific and Technical Conference of Moscow Institute of Chemical Machinery), Vol 2, vyp. 1, Moscow, 1970, pp 255-258 (from RZh-Metallurgiya, No 3, Mar 71, Abstract No 3I716 by V. Gerasimov)

Translation: The authors studied the electrochemical behavior of the AMg6M alloy after hardening (450°, 4 hr, air cooling), hardening and aging (175°, 100 hr) in neutral, acid, alkaline solutions of 1 n. $NaNO_3$ and in the same environments with the addition of Cl. Aging impairs the breakdown potential due to segregation of the beta phase, the oxide film on which possesses reduced protective properties. In an acid medium the beta phase is an anode, which leads to deterioration of the steady potential and an increase in the anodic process rate for all potentials. Heat treatment has much less of an effect in an alkaline medium. The electrochemical characteristics of a weld and the zone near the weld are studied.

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USSR UDC: 620.194

SIGALOVSKAYA, T. M., and ZARETSKIY, Ye. M., Moscow Institute of Chemical Machinery

"Tendency of AMg6 Alloy to Corrosion Cracking"

Moscow, Zashchita Metallov, Vol. 6, no. 4, Jul-Aug 70, pp 428-429

Abstract: The dependence of aluminum corrosion rate and potentials on pH is correlated with a Pourbaix diagram (E. Detombe, M. Pourbaix, Corrosion, 1958, 14, 496) to study the tendency to corrosion cracking (TCC). The data show that in strongly alkaline solutions the potential of AMg6 alloy is very negative and the corrosion is total; corrosion cracking is observed within pH 6.5--9.5 (depending on chlorine ion concentration). Within pH 2.8--2.0, TCC slightly decreases. In strongly acid solutions the total corrosion is followed by a high rate of corrosion cracking. The TCC of the AMg6 alloy is typical of the left and central regions of Pourbaix diagram where it varies slightly (the chlorine-ion concentration being constant); it is not typical of the right part of the diagram despite the high corrosion rate in both right and left parts of the diagram. The values of the pH of the solution and the stationary potential in themselves affect the cracking corrosion much less than chlorine-ion concentration.

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1/2 015 UNCLASSIFIED PROCESSING DATE--16OCT70

TITLE--PHASE EQUILIBRIUMS IN GE TE A PRIMEII TE SYSTEMS -U-

AUTHOR-(03)-NAGIYEV, V.A., ZARGAROVA, M.I., GLAZOV, V.M.

COUNTRY OF INFO--USSR

SOURCE--IZV. AKAD. NAUK SSSR, NEORG. MATER. 1970, 6(3), 569-71

DATE PUBLISHED--------70

SUBJECT AREAS--CHEMISTRY, MATERIALS

TOPIC TAGS--THERMAL ANALYSIS, GERMANIUM COMPOUND, ZINC COMPOUND, MERCURY COMPOUND, CADMIUM COMPOUND, PHASE DIAGRAM, TELLURIDE, PHASE EQUILIBRIUM

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--1996/0897 STEP NO--UR/0363/70/006/003/0569/0541

CIRC ACCESSION NO--AP0118066

UNCLASSIFIED

2/2 015 UNCLASSIFIED PROCESSING DATE--16OCT70

CIRC ACCESSION NO--AP0118066

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE PHASE EQUIL. AND PHASE DIAGRAMS OF THE GETE A PRIMEII TE (A IS CA, HG, AND ZN) SYSTEMS WERE STUDIED BY SUBJECTING A SERIES OF ALLOYS TO DTA, MICROSTRUCTURAL, AND X RAY PHASE ANAL. THE DTA CRUVES OF ALLOYS OF THESE SYSTEMS ARE CHARACTERIZED BY THE PRESENCE OF 3 (AND IN SOME CASES, 2) THEMAL EFFECTS. THE PHASE DIAGRAMS ARE SIMILAR; THE INTERACTION OF THE HIGH TEMP. FORM OF GETE WITH ZNTE, CDTE, OR HGTE IS DESCRIBED BY PHASE DIAGRAMS OF THE EUTECTIC TYPE WITH A LIMITED SOLY. IN THE SOLID STATE, IN WHICH THE EUTECTIC TEMP. DECREASES REGULARLY AND THE EUTECTIC CONCN. INCREASES IN THE A PRIMEII TE SERIES BY THE CATIONIC SUBSTITUTION WITH THE HEAVIER ELEMENT. THE NATURE OF THE INTERACTION OF THE LOW TEMP. PHASE OF GETE WITH ZNTE, CDTE, OR HGTE IS DESCRIBED BY THE PHASE DIAGRAM OF THE EUTECTOIDAL TYPE WITH A LIMITED SOLY. THE GETE A PRIMEII TE SECTIONS IN THER TERNARY GE A PRIMEII TE SYSTEMS ARE QUASIBINARY AND ARE CHARACTERIZED BY RELATIVELY SIMPLE PHASE DIAGRAMS. THE A PRIMEII B PRIMEVI COMPDS. DISSOLVE IN GETE TO GREATER THAN OR EQUAL TO 1.5-2 MOLE PERCENT. INTRODUCTION OF 0.5 MOLE PERCENT A PRIMEII TE INTO GETE CONTG. A 2ND PHASE DUE TO DEVIATIONS FROM STOICHIOMETRY RESULTS IN DISAPPEARANCE OF THE 2ND PHASE. ALL THE ALLOYS ARE SINGLE PHASE AT 0.5-1.5 MOLE PERCENT A PRIMEII TE. FACILITY: MOSK. INST. STALI SPLAVOV, MOSCOW, USSR.

UNCLASSIFIED

USSR

UDC 621.315.592

AVER'YANOVA, T. V., BAKUMENKO, V. L., ZARGAR'YANTS, M. N., KURBATOV, L. N., MEZIN, YU. S.

"Photoluminescence of the GaAs:Zn, Ge-GaAs:Ge p-n-Junction"

Leningrad, Fizika i Tekhnika Poluprovodnikov, Vol 6, No 2, 1972, pp 376-380

Abstract: Results are presented from spectral microphotoluminescent investigations of p-n-junctions obtained by diffusion of zinc in n-type GaAs alloyed with germanium. Inasmuch as the results of investigating the long wave component of the photoluminescence of these p-n-junctions was discussed earlier [T. V. Aver'yanova, et al., FTP, No 5, 331, 1971], only the shortwave part of the emission (8,100-8,500 Å) is ivestigated in the present paper. All the studies were performed at a temperature of 77° K. The photoluminescence was observed from the shearing side with respect to the cleavage planes perpendicular to the p-n-junction plane. A He-Ne laser with λ = 6,328 Å was used as the excitation source. Curves are presented showing the spectral composition of the photoluminescence of n-type GaAs alloyed with Ge for n = $(2.7\text{-}4)\cdot10^{16}$ cm^{-3} and T = 77° K, the photoluminescence and photoresponse characteristics for the structure obtained by diffusion of Zn in n-type GaAs:Ge and the photoluminescence characteristic of the structure obtained by diffusion of zinc in

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USSR

AVER'YANOVA, T. V., et al., Fizika i Tekhnika Poluprovodnikov, Vol 6, No 2, 1972, pp 376-380

n-GaAs: Te. The proposed model for explaining the results of the spectral microphotoluminescent measurements appears plausible but requires direct proof.

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1/2 020 UNCLASSIFIED PROCESSING DATE--30OCT70

TITLE--AMPLITUDE FREQUENCY CHARACTERISTICS OF SEMICONDUCTOR SOURCES OF THE SPONTANEOUS RADIATION -U-

AUTHOR-(03)-ZARGARYANTS, M.N., POPOV, YU.V., UTENKOV, B.I.

COUNTRY OF INFO--USSR

SOURCE--LENINGRAD, OPTIKO-MEKHANICHESKAYA PROMYSHLENNOST', NO 2, FEB 70, PP 10-13

DATE PUBLISHED----FEB70

SUBJECT AREAS--PHYSICS

TOPIC TAGS--FREQUENCY CHARACTERISTIC, RADIATION SOURCE, SEMICONDUCTOR CRYSTAL

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

STEP NO--UR/0237/70/000/002/0010/0013

PROXY REEL/FRAME--1996/1583

CIRC ACCESSION NO--AP0118566

UNCLASSIFIED

2/2 020 UNCLASSIFIED PROCESSING DATE--30OCT70
CIRC ACCESSION NO--AP0118566
ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. A THEORETICAL EVALUATION WAS MADE OF THE INERTIAL PROPERTIES OF SEMICONDUCTOR SOURCES OF THE SPONTANEOUS RADIATION. A SATISFACTORY COINCIDENCE WAS OBTAINED OF THE EXPERIMENTAL TESULTS WITH THE CALCULATED ONES.

UNCLASSIFIED

USSR

UDC: 536.221:537.312.5

DUL'NEV, G. N., ZARICHNYAK, Yu. P., Leningrad Institute of Precision Mechanics and Optics

"On Calculating the Thermal and Electrical Conductivity of Melts of Some Metals"

Moscow, Teplofizika Vysokikh Temperatur, Vol 10, No 4, Jul/Aug 72, pp 771-777

Abstract: Formulas are presented for calculating the thermal and electrical conductivity of a binary melt based on a model which assumes that components which are practically insoluble in the solid state should retain independent regions filled with homogeneous atoms or molecules at temperatures above the melting point but considerably below the boiling point, i. e. there should be regions displaying short-range order even in a molten binary alloy comprised of such components. The proposed formulas give the coefficients of thermal and electrical conductivity in terms of the known coefficients of the components and their concentration. Comparison with experimental data shows certain discrepancies which can be attributed to measurement error, differences between the chemical com-

USSR

DUL'NEV, G. N., ZARICHNYAK, Yu. F., Teplofizika Vysokikh Temperatur, Vol 10, No 4, Jul/Aug 72, pp 771-777

position of the components in the solid and molten states, or the presence of regions with short-range order having a solid-solution structure. On the whole, coincidence between theory and experiment is better for the proposed model than for models in the form of structures with closed inclusions.

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1/2 013 UNCLASSIFIED PROCESSING DATE--30OCT70

TITLE--CALCULATION OF THE THERMAL CONDUCTIVITY OF MULTICOMPONENT SOLUTIONS OF NORMAL AND ASSOCIATED LIQUIDS -U-

AUTHOR-(03)-AGA, O.B., DULNEV, G.N., ZARICHNYAK, YU.P.

COUNTRY OF INFO--USSR

SOURCE--IZV. VYSSH. UCHEB. ZAVED., NEFT GAZ 1970, 13(3), 79-82

DATE PUBLISHED--------70

SUBJECT AREAS--PHYSICS

TOPIC TAGS--THERMAL CONDUCTIVITY, MULTICOMPONENT SYSTEM, SOLUTION PROPERTY, CALCULATION

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--2000/1126 STEP NO--UR/0152/70/013/003/0079/0082

CIRC ACCESSION NO--AP0124781

UNCLASSIFIED

UNCLASSIFIED PROCESSING DATE--30OCT70

2/2 013

CIRC ACCESSION NO--AP0124781

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE THERMAL COND. WAS CALCD. ACCORDING TO THE METHOD OF G. N. DUL'NEV AND YU. P. ZARICHNYAK (1966, 1967) AND CORRESPONDED TO THE EXPTL. DATA. THE METHOD WAS RECOMMENDED FOR CALCG. THE COND. OF SOLNS. OF NON REACTING LIQS., INCLUDING AQ. AND NONAQ. COMPONENTS. FACILITY: LENINGRAD. INST. TOCHNOI MEKH. OPT., LENINGRAD. USSR.

UNCLASSIFIED

1/2 021 UNCLASSIFIED PROCESSING DATE--04DEC70

TITLE--CALCULATION OF THE THERMAL CONDUCTIVITY OF BINARY GAS MIXTURES -U-

AUTHOR-(03)-DULNEY, G.N., ZARICHNYAK, YU.P., MURATOVA, O.L.

COUNTRY OF INFO--USSR

SOURCE--INZH.-FIZ. ZH. 1970, 18(5), 849-55

DATE PUBLISHED-------70

SUBJECT AREAS--PHYSICS

TOPIC TAGS--THERMAL CONDUCTIVITY, GAS STATE, CALCULATION

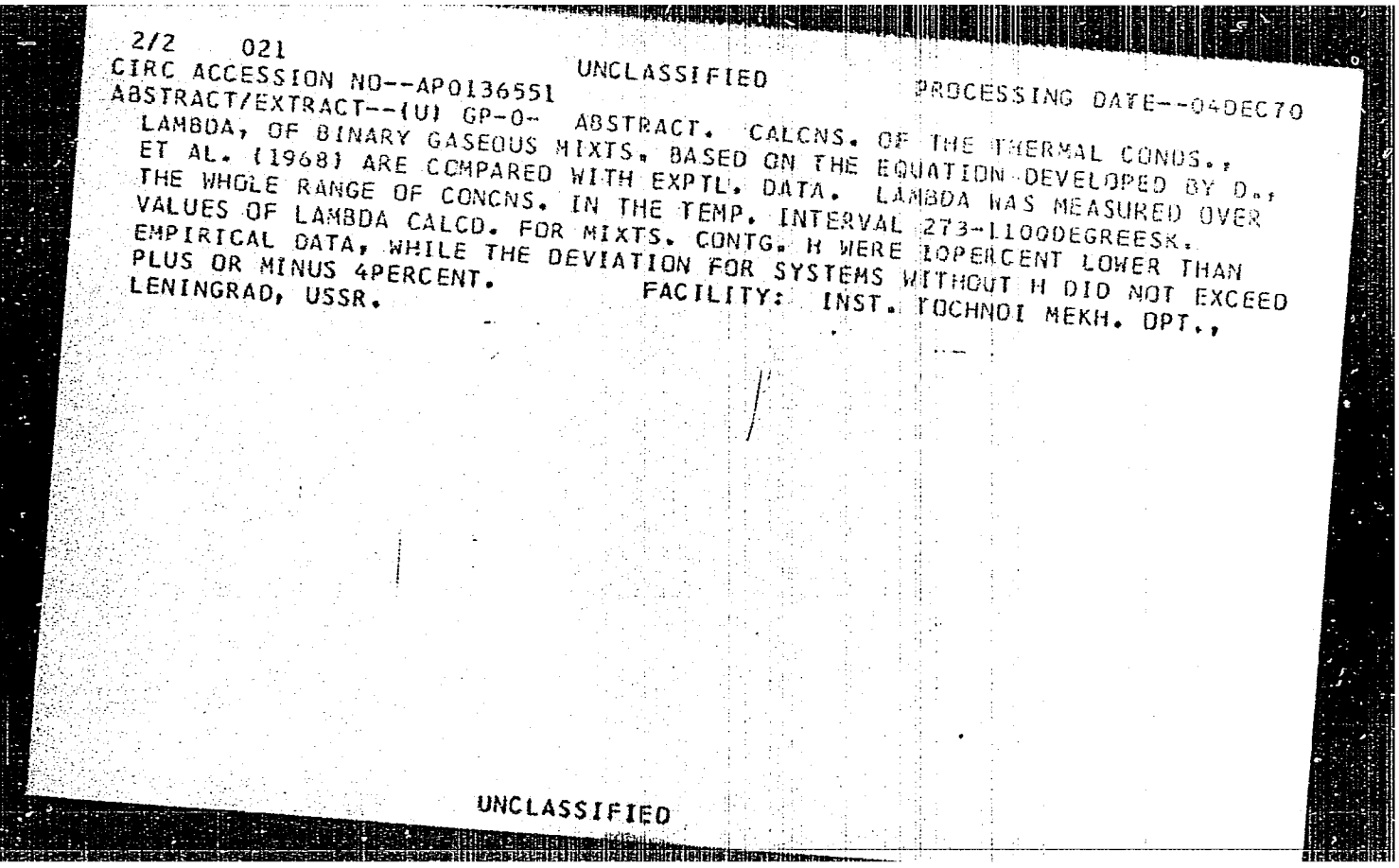
CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--3007/1131 STEP NO--UR/0170/70/018/005/0849/0855

CIRC ACCESSION NO--AP0136551

UNCLASSIFIED



2/2 021 UNCLASSIFIED PROCESSING DATE--04DEC70

CIRC ACCESSION NO--AP0136551

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. CALCNS. OF THE THERMAL CONDS., LAMBDA, OF BINARY GASEOUS MIXTS. BASED ON THE EQUATION DEVELOPED BY D., ET AL. (1968) ARE COMPARED WITH EXPTL. DATA. LAMBDA WAS MEASURED OVER THE WHOLE RANGE OF CONCNS. IN THE TEMP. INTERVAL 273-1100DEGREESK. VALUES OF LAMBDA CALCD. FOR MIXTS. CONTG. H WERE 10PERCENT LOWER THAN EMPIRICAL DATA, WHILE THE DEVIATION FOR SYSTEMS WITHOUT H DID NOT EXCEED PLUS OR MINUS 4PERCENT. FACILITY: INST. TOCHNOI MEKH. OPT., LENINGRAD, USSR.

UNCLASSIFIED

USSR

UDC 514.183:541.124/128

ZARIF'YANTS, YU. A., KARYAGIN, S. N., KISELEV, V. F., KHRUSTALEVA, S. V., and CHUKIN, G. D., Moscow State University imeni M. V. Lomonosov

"Possibility of the Control of Binding Forms of Adsorbed Molecules by Means of a Change in the Electronic State of the Semiconductor Surface"

Moscow, Doklady Akademii Nauk SSSR, Vol 202, No 1, Jan-Feb 72, pp 109-112

Abstract: IR and EPR spectra of p-benzoquinone (BQ) molecules adsorbed on rutile were studied. First passage of BQ over rutile powder leads to the appearance of two bands in the IR spectrum at 1505 and 1470 cm^{-1}. The first band was assigned to >C:O grouping of the BQ molecule bound to coordination unsaturated Ti^{3+} atoms. This band is quite stable, even after heating the complex to 400° in vacuum it does not disappear. The 1470 cm^{-1} band was assigned to an anion radical of BQ formed by a transfer of an electron from the solid body directly onto the orbitals of the adsorbed molecule. With more complete saturations more bands appear: 1675 cm^{-1} assigned to BQ molecules bound with weak van der Waal forces to the surface, 1657 cm^{-1} — due to the molecules hydrogen bonded to hydroxyl groups. Adsorption of BQ results in a negative charge on the surface of rutile. Population of the surface levels increases with increased Fermi levels. It was shown that with higher degrees of reduction

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ZARIF'YANTS, YU. A., et al., Doklady Akademii Nauk SSSR, Vol 202, No 1, Jan-Feb 72, pp 109-112

the intensity of the 1470 cm^{-1} band increases, while oxidation of the sample (lowering Fermi levels) prior to the adsorption of BQ results in complete dis appearance of this band. When the rutile specimen was heated to 200° (after passage of BQ), the 1675 and 1657 cm^{-1} bands disappeared, the intensity of 1470 cm^{-1} bands increased, and that of 1505 cm^{-1} decreased respectively. At 400° the 1470 cm^{-1} band exceeds substantially the intensity of the 1505 cm^{-1} band. Also, rutile specimens irradiated with a UV lamp (filter transparent in the 400-700 mu region) shows identical behavior. Thus it was possible to stimulate a change in binding form of the molecules adsorbed on the surface, reflected by the IR spectra, by generating excess carriers through the illumination of solid body.

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USSR

UDC 535.215.1

POPIK, Yu. V., and ZARIF'YANTS, Yu. A.

"Effect of Adsorption of Certain Gasses on the Electrical and Photoelectric Properties of Lead Sulfide Lyaers"

V sb. Poluprovodn. elektronika (Semiconductor Electronics -- Collection of Works), Uzhgorod, 1971, pp 131-145 (from RZh-Elektronika i yeye primeneniye, No 9, September 1971, Abstract No 9B397)

Translation: The effect is studied of the adsorption of acceptor gas NO, donor gas CO and water vapor on the electrical properties and the photoconductivity of PbS layers obtained by deposition in a vacuum on a mica substrate. It is discovered that chemisorption of CO and NO leads to a decrease of the photoconductivity. 7 ill. 13 ref. I.V.

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172 015 UNCLASSIFIED PROCESSING DATE--23OCT70

TITLE--FORM OF THE BONDING OF CHEMISORBED MOLECULES OF NITRIC OXIDE WITH A LEAD SULFIDE SURFACE -U-

AUTHOR-(02)-ZARIFYANTS, YU.A., POPIK, YU.V.

COUNTRY OF INFO--USSR

SOURCE--ZH. FIZ. KHIM. 1970, 44(3), 777-8

DATE PUBLISHED-------70

SUBJECT AREAS--CHEMISTRY

TOPIC TAGS--NITRIC OXIDE, LEAD SULFIDE, CHEMISORPTION

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--1996/1894

STEP NO--UR/0076/70/044/003/0777/0778

CIRC ACCESSION NO--AP0118856

UNCLASSIFIED

2/2 015 UNCLASSIFIED PROCESSING DATE--23OCT70

CIRC ACCESSION NO--AP0118856

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE EFFECT OF CHEMISORPTION OF NO ON THE COND. OF A PBS FILM WAS STUDIED. NO PROBABLY CAPTURES 1 ELECTRON AND SHARES IT WITH A SURFACE DEFECT ON THE PBS; LOSS OF THIS ELECTRON CREATES A CATIONIC DEFECT IN THE FILM. BY APPLICATION OF THE LAW OF MASS ACTION, THE CONCN. OF CATIONIC DEFECTS PRODUCED IS PROPORTIONAL TO (NO)PRIME ONE-HALF, WHERE (NO) REPRESENTS THE SURFACE CONCN. OF UNREACTED NO. HENCE, BY ASSUMING A LINEAR ABSORPTION ISOTHERM OVER THE RANGE CONSIDERED, THE INCREASE IN COND. SHOULD BE PROPORTIONAL TO THE SQUARE ROOT OF THE NO PRESSURE. THE EXPTL. RESULTS AGREE WITH THIS MODEL. FACILITY: FIZ. FAK., MOSK. GOS. UNIV. IM. LOMONOSOVA, MOSCOW, USSR.

UNCLASSIFIED

1/2 012 UNCLASSIFIED PROCESSING DATE--11SEP70
TITLE--DISLOCATION STRUCTURE OF ALUMINUM ANTIMONIDE SINGLE CRYSTALS -U-

AUTHOR--MILEVSKIY, L.S., ZARIFYANTS, Z.A., ZHUCHKOVA, L.A.

COUNTRY OF INFO--USSR

SOURCE--KRISTALLOGRAFIYA 1970, 15(1), 119-24

DATE PUBLISHED-------70

SUBJECT AREAS--MATERIALS, PHYSICS

TOPIC TAGS--SINGLE CRYSTAL, CRYSTAL LATTICE DISLOCATION, ALUMINUM ANTIMONIDE

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--1984/0115 STEP NO--UR/0070/70/015/001/0119/0124

CIRC ACCESSION NO--AP0054911
UNCLASSIFIED

UNCLASSIFIED PROCESSING DATE--11SEP70

2/2 012

CIRC ACCESSION NO--AP0054911

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. SINGLE CRYSTALS OF ALSB WITH A LOW DISLOCATION D. (10-10,000 CM PRIME2NEGATIVE) WERE USED TO STUDY THEIR DISLOCATION STRUCTURE; 4 TYPES OF DISLOCATIONS WITH AXES PARALLEL TO THE (112) DIRECTION WERE OBSD.: EDGE AND 30DEGREES DISLOCATION IN THE (111) GLIDE PLANE, A 54DEGREES DISLOCATION IN THE (110) GLIDE PLANE, AND A 73DEGREES DISLOCATION IN THE (113) GLIDE PLANE, AS WELL AS 2 TYPES OF SIMPLE DISLOCATION: AN EDGE DISLOCATION IN THE (100) GLIDE PLANE AND A 60DEGREES DISLOCATION ALONG THE (110) DIRECTION. ALL INVESTIGATED AT. DISLOCATIONS HAD THE BURGERS VECTOR B EQUALS A-2 (110) EQUALS 4.35 ANGSTROMS. MACRODISLOCATIONS WERE OBSD. AT THE TWINNING BOUNDARIES. THE PHOTOELASTIC CONSTS. OF THE MATERIAL WERE DETD.

UNCLASSIFIED

UDC 547.241+547.27

USSR

KRASIL'NIKOVA, Ye. A., RAZUMOV, A. I., BAYANDINA, Ye. V., and ZARINOVA, V. G.

"The Reaction of the Ethyl Ester of Diphenylthiophosphinic Acid with α-Halide Substituted Simple Esters"

Leningrad, Zhurnal Obshchey Khimii, Vol 41, No 5, May 1971, pp 1173-1174

Abstract: The ethyl ester of diphenylthiophosphinic acid reacts with α-halide substituted simple esters. The following products were separated from the reaction mixture: diphenylalkoxyalkylphosphine sulfides, the ethyl ester of diphenyldithiophosphinic acid, and diphenyldi(alkoxyalkyl)-phosphonium chlorides.

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USSR

ZARINSKIY, V., KLUG, O.

"Third International Symposium on Oscillometry"

Moscow, Zhurnal Analiticheskoy Khimii, Vol 25, No 5, May 70, pp 1030-1031

Abstract: The Third International Symposium on Oscillometry, organized by the Slovak Chemical Society, the Slovak Academy of Sciences, and by the Hungarian Chemical Society was held Sep 22-24, 1969 in Gorno Smakovtse, Czechoslovakia. Seventeen papers were delivered on the theory, instrumentation and analytical application of high frequency method. E. PUNGOR reviewed new modifications of the electroanalytical methods -- high frequency, dielkometric and potentiometric. V. LI reported data on the use of electrolytic cell as noise generator. The papers of R. BERTRAM and L. PAZHITEK, R. BERTRAM and SH. PETEFALVI, and O. KLUG, et al, covered original diagrams and construction of instruments. G. SHTUGETS proposed a diagram for an automatic titrator, and F. VALLO reported on analyses of industrial aqueous solutions of aluminates. V. SKOTT and

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USSR

ZARINSKIY, V., et al, Zhurnal Analiticheskoy Khimii, Vol 25, No 5, May 70, pp 1030-1031

S. SHVEKLA talked about their work in analysis of inorganic substances using a titrator developed by them. Measuring characteristics of inductive cells were analyzed by A. BELLOMO. Several new types of humidity-dielkometers were discussed by SH. NADYA, B. VARGA, and G. SABO. F. AKKERMAN and G. FREY reported on complexometric titration of trivalent and divalent ions. L. BALAZA and E. PUNGOR determined sulfate ions in various wines. K. GOKHMAN determined calcium in ferromagnetic garnets. Experimental data on determination of barium in ferrites and in semiconductors were discussed by E. PAL'DA. V. TALASHEK and YA. ELIASHEK reviewed studies on the kinetics of diffusion and ion exchange on ion exchange resins. Finally, SH. NAD' and A. KISH described the thermodielectric method and the method of dielectrometric spectroscopy.

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USSR

UDC 612.06:612.015.348+543.257

KALVELIS, A. D., and ZARINYA, L. A., Riga Medical Institute

"The Effect of Some Strong Irritants and Biologically Active Substances on the Level of Serum SH-Groups and the Polarographic Filtration Test"

Riga, Izvestiya Akademii Nauk Latviyskoy SSR No 5(274), 1970, pp 65-68

Abstract: A study was made of the effect of some strong irritants on the polarographic filtration test and the level of serum SH-groups in 99 white rats. During aseptic inflammation, septicemia, and after introduction of ACTH, a decrease in the content of SH-groups in blood serum and an increase in both polarographic waves were observed. During asphyxia, hypothermia and after the introduction of prednisolone, the first polarographic wave increased, and the level of serum SH-groups decreased. Burn shock and the introduction of adrenalin lowered only the content of serum Sh-groups. During aseptic inflammation, a lowering of albumin and gamma-globulin content was observed, as well as an increase in $alpha_2$-globulins and the optical density of sialic acids in blood serum. After the introduction of prednisolone the $alpha_2$-globulin content in blood serum increased, and the gamma-globulin content decreased. It may be assumed that the underlying reason for the displacement in the polarographic filtration test and level of serum Sh-groups is the modified serum protein and mucoprotein composition. There are nonspecific differences in the mechanism of changes occurring in both tests.

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ZARINYA, D.B.

USSR

GARIFULLINA, R. L. and ZARIPOV, M. M. UDC: None

"Spin Hamiltonian of the Crystalline Field for Exchange-Coupled, Iron-Group Ion Pairs"

Leningrad, Fizika Tverdogo Tela, No 6, 1973, pp 1909-1910

Abstract: Cases are known in which fourth-order terms for the crystalline field must be taken into account to identify electron paramagnetic resonance spectra for ion pairs of the iron group. This brief communication obtains expressions corresponding to such terms of the crystalline field for the spin Hamiltonian of a pair. It is noted that the terms obtained are valid only when $2S \geqslant 4$, where S is the spin Hamiltonian. The authors thank M. V. Yeremin for his advice.

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1/2 014 UNCLASSIFIED PROCESSING DATE--18SEP70

TITLE--EPR STUDY OF AN EXCHANGE COUPLED PAIR OF FE PRIME3 POSITIVE IONS IN CORUNDUM -U-

AUTHOR-(03)-GARIFULLINA, R.L., ZARIPOV, M.M., STEPANOV, V.G.

COUNTRY OF INFO--USSR

SOURCE--FIZ. TVERD. TELA 1970, 12(1), 55-8

DATE PUBLISHED--------70

SUBJECT AREAS--MATERIALS

TOPIC TAGS--EPR, IRON, ANTIFERROMAGNETIC MATERIAL, SAPPHIER, CORUNDUM

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--1984/0217 STEP NO--UR/0181/70/012/001/0055/0058

CIRC ACCESSION NO--AP0055013

UNCLASSIFIED

2/2 014 UNCLASSIFIED

CIRC ACCESSION NO--AP0055013 PROCESSING DATE--18SEP70

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. TEMP. AND ANGULAR DEPENDENCIES WERE STUDIED OF THE EPR SPECTRUM OF EXCHANGE COUPLED PAIRS OF FE PRIME3 POSITIVE IONS IN NATURAL SAPPHIRE (1PERCENT FE). FOUR LINES WERE SEPD. AT H PERPENDICULAR TO C SUB3 AND 2 LINES AT H PARALLEL TO C SUB3 WHICH ARE RELATED TO THE LEVEL WITH S EQUALS 3 OF THE ANTIFERROMAGNETIC PAIR OF THE CLOSEST NEIGHBORS. FOR THAT PAIR, CALCN. WAS CARRIED OUT OF THE ENERGY LEVELS FOR S EQUALS 1, 2, AND 3. THE CONST. OF DIPOLE DIPOLE INTERACTION WAS CHOSEN AS 974 OE, WHICH IS CLOSE TO THE CONST. CALCD. FROM THE INTERIONIC DISTANCE AND EQUAL TO 912.9 OE. FROM THE TEMP. DEPENDENCE OF THE INTENSITY OF LINES THE CONST. WAS CALCD. OF THE ISOTROPIC EXCHANGE INTERACTION J EQUALS 250 PLUS OR MINUS 50 CM PRIME NEGATIVE1. BY USING AN 8 MM SPECTROMETER AT H PARALLEL TO C SUB3, FROM THE TEMP. DEPENDENCE, A LINE WAS SEPD. RELATED TO THE LEVEL WITH S EQUALS 1 FOR THE SAME PAIR. THE POSITION OF THE LINE COINCIDES WITH THE CALCD. POSITION.

UNCLASSIFIED

1/2 012 UNCLASSIFIED PROCESSING DATE--18SEP70

TITLE--ELECTRON PARAMAGNETIC RESONANCE OF CU PRIME2 POSITIVE IN POTASSIUM SULFATE -U-

AUTHOR-(03)-ABDUISABIROV, R.YU., GREZNEV, YU.S., ZARIPOV, M.M.

COUNTRY OF INFO--USSR

SOURCE--FIZ. TVERD. TELA 1970, 12(2), 657-9

DATE PUBLISHED--------70

SUBJECT AREAS--MATERIALS

TOPIC TAGS--POTASSIUM SULFATE, COPPER, ELECTRON PARAMAGNETIC RESONANCE, CRYSTAL LATTICE STRUCTURE

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--1984/0125 STEP NO--UR/0181/70/012/002/0657/0659

CIRC ACCESSION NO--AP0054921

UNCLASSIFIED

2/2 012 UNCLASSIFIED PROCESSING DATE--18SEP70

CIRC ACCESSION NO--AP0054921

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE EPR SPECTRUM WAS INVESTIGATED OF CU PRIME2 POSITIVE IONS IN K SUB2 SO SUB4 (B) AT 77DEGREES K AT A WAVELENGTH OF 8 MM. THE SALT CRYSTALLIZES IN THE ORTHORHOMBIC SYSTEM AND BELONGS RO THE SPACE GROUP P NAM. THE SPECTRUM IS DUE TO 3 DIFFERENT TYPES OF PARAMAGNETIC CENTERS FORMED BY SUBSTITUTION OF K SUB2 POSITIVE (TYPE 2 CATIONIC SITE) BY CU PRIME2 POSITIVE IONS. ALL 3 TYPES CAN BE DESCRIBED BY THE ORTHORHOMBIC SPIN HAMILTONIAN WITH S EQUALS ONE HALVES AND I EQUALS THREE HALVES. PARAMETERS OF THE SPIN HAMILTONIAN WERE OBTAINED FROM THE ANGULAR DEPENDENCE AND ARE TABULATED. FORMATION OF THE 3 TYPES OF PARAMAGNETIC CENTERS CAN BE EXPLAINED BY CHARGE COMPENSATION WHICH TAKES PLACE ON SUBSTITUTION OF MONOVALENT ION WITH DIVALENT ION. THE EXCESS CHARGES OF CU PRIME2 POSITIVE IONS SUBSTITUTING FOR K SUB2 POSITIVE ARE COMPENSATED BY VACANCIES IN THE POSITION OF NEIGHBORING K SUB1 POSITIVE (TYPE 1 CATIONIC SITE).

UNCLASSIFIED

APPROVED FOR RELEASE: 09/01/2001 CIA-RDP86-00513R002203720017-7"

USSR

STEPANOV, V. G.; GARIFULLINA, R. L.; ZARIPOV, M. M. (Kazan State University)

"Study of Exchange-Coupled Pair of Fe^{3+} Ions in Corundum by EPR Method"

Leningrad, Solid State Physics; January, 1970; pp 55-8

Δ Δ Δ

ABSTRACT: By means of a three-centimeter spectroscope the authors studied the variation of the EPR spectrum of exchange-coupled pairs of Fe^{3+} ions in a natural sapphire (concentration of iron ions on the order of 1%) with temperature and angle. Four lines with $H \perp C_3$ and two lines with $H \parallel C_3$, related to the level with $S = 3$ of the antiferromagnetic pair of the nearest neighbors, were isolated. Energy levels for $S = 1$, 2, and 3 were determined for this pair. In this case a dipole-dipole interaction constant equal to 974 oersteds, which is close to that calculated according to the inter-ion distance and equal to 912.9 oersteds, was selected. The constant of isotropic exchange interaction $J = 250 \pm 50$ cm^{-1} was determined by the relation of the line intensity to the temperature.

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USSR

STEPANOV, V. G., et al, Solid State Physics; January, 1970; pp 55-8

A line related to the level with S = 1 for this same pair was isolated on an eight-millimeter spectroscope with $H \parallel C_3$ according to the temperature relationship. The position of the line agreed well with the calculated position.

The authors thank S. A. Al'tshuler for his interest and discussion of the work and I. Fattakhov and R. Yu. Abdulsabirov for their assistance. The article includes three equations. There are 8 references.

2/2

USSR

ABDULSABIROV, R. Yu., GREZNEV, Yu. S., ZARIPOV, M. M., STEPANOV, V. G.,
Kazan' State University imeni V. I. Ul'yanov-Lenin

"Temperature Dependence of the Electron Paramagnetic Resonance Spectrum of Bivalent Manganese Cation in Cesium Sulfate"

Leningrad, Fizika Tverdogo Tela, Vol 14, No 6, Jun 72, pp 1816-1817

Abstract: The EPR spectrum of Mn^{2+} was studied in the temperature range of 4.2-300°K on a wavelength of 8 mm in Cs_2SO_4 crystals grown from an aqueous solution doped with about 1.5% $MnSO_4$. It was found that the Cs_2^+ ions replace the Mn^{2+} ions and that the excess positive charge is compensated by a vacancy in the position of the adjacent Cs_1^+. The angles calculated for the Cs_2^+-Cs_1^+ pairs with the a, b, and c axes were 71°10', 55°30', and 40°30' respectively. The temperature dependence of the EPR spectrum shows a phase transition of λ-type at 44±5°K. Confirmation of the type of phase transition will require studies of the temperature behavior of EPR spectra of isostructural crystals. The authors thank T. B. Bogatov for growing the crystals.

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USSR

GARIFULLINA, R. L., ZARIPOV, M. M., STEPANOV, V. G., TOLPAROV, Yu. N., Kazan' State University imeni V. I. Ul'yanov-Lenin

"Exchange-Coupled Mn^{2+} Ion Pairs in NaCl"

Leningrad, Fizika Tverdogo Tela, Vol 14, No 12, Dec 72, pp 3513-3516

Abstract: The electron paramagnetic resonance method is used to study exchange-coupled pairs of short-range, neighboring, bivalent manganese cations in sodium chloride crystals grown with sulfur dopants. It is shown that this pair is ferromagnetic. The constants of the spin hamiltonian are determined at room temperature for the multiplet with S=5: g=2.004±0.0005, $|D| = 0.0259 \pm 0.0001$ T, $|E| = 0.0029 \pm 5 \cdot 10^{-5}$ T, and $|A/2| = 0.0042 \pm 0.0002$ T. The variation of line intensity with temperature gives a constant of isotropic exchange interaction $J = -(63 \pm 17)$ cm^{-1}. A model is proposed for compensation of excess charges of the Mn^{2+} ions.

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USSR

UDC 546.18'13:539.27

NAUMOV, V. A., ZARIPOV, N. M., and GULYAYEVA, N. A., Institute of Organic and Physical Chemistry Imeni A. Ye. Arbuzov, Acad. Sc. USSR, Kazan'

"Electronographic Study of the Molecular Structure of Phenyldichlorophosphine"

Moscow, Zhurnal Strukturnoy Khimii, Vol 13, No 5, Sep-Oct 72, pp 917-918

Abstract: Molecular structure of phenyldichlorophosphine was studied by the electronographic method. The data obtained indicated a symmetrical model for the molecule with the angle of rotation about the P-C bond φ being 0° and 90°. Further investigation showed that the rotation about that bond is hindered with the minimum angle at $\varphi = 0$. Evidently there is no conjugation between the π-electrons of the phenyl ring and the unshared electron pair of the phosphorus atom, which would tend to stabilize the configuration.

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USSR UDC 547.879:539.27+546.13'18:539.27

NAUMOV, V. A., and ZARIPOV, N. M., Institute of Organic and Physical Chemistry Imeni A. Ye. Arbuzov, Acad. Sc. USSR, Kazan'

"Electronographic Study of the Molecular Structure of Trimethylene Chlorophosphite"

Moscow, Zhurnal Strukturnoy Khimii, Vol 13, No 5, Sep-Oct 72, pp 768-773

Abstract: According to electronographic data obtained, the most probable structure of a molecule of trimethylene chlorophosphite is a chair conformation with an axial P-Cl bond. According to B. A. ARBUZOV this molecule should have an equatorial P-Cl bond. No explanation is given for these contradictory statements.

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USSR UDC 539.27

NAUMOV, V. A., ZARIPOV, N. M., DASHEVSKIY, V. G., Institute of Organic and Physical Chemistry Imeni A. Ye. Arbuzov, Acad. Sc. USSR, Institute of Element-Organic Compounds, Academy of Sciences USSR.

"Electronographic Study of the Molecular Structure of Methyl Dichloro-phosphite"

Moscow, Zhurnal Strukturnoy Khimii, Vol 12, No 1, Jan-Feb 71, pp 158-160

Abstract: Tricoordinated phosphorus compounds with directly bound nitrogen and oxygen atoms have much longer P-Cl bonds than PCl_3. This study centered around molecules with only a single oxygen atom, methyl dichlorophosphite (I) being selected as the model compound. Experimental data obtained showed that the molecular configuration of (I) corresponds to the rotational isomer with $\varphi = 17°$. The P-Cl bond length was found to be about 0.02 Å shorter than that of the ethylene chlorophosphite. The value obtained is identical to the P-Cl distance in dimethylamidodichlorophosphite. It is concluded that both the nitrogen and oxygen atoms similarly affect the changes in the P-Cl bond length.

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USSR UDC 547.341.26'118.07

ZARIPOV, R. K., AZERBAYEV, I. N., and AYMAKOV, U. A., Chemical-Metallurgical Institute, Academy of Sciences, KazakhSSR

"Reaction of the Esters of Hydroxymethylphosphonic Acid With Orthoformate Esters"

Leningrad, Zhurnal Obshchey Khimii, Vol 43 (105), No 4, Apr 73, pp 764-765

Abstract: A mixture of 29.6 g triethylorthoformate and 44.8 g di-n-butyl ester of hydroxymethylphosphinic acid was heated in an oil bath to 130° for 30-35 min distilling over about 12 ml of ethyl alcohol. The residue was vacuum distilled yielding di-n-butyl ester of diethoxymethyl(hydroxymethyl)-phosphinic acid. A series of homologues was obtained in an analogous manner. The products are colorless volatile liquids without a marked odor, soluble in organic solvents.

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USSR

UDC 547.241

VALETDINOV, R. K., ZARIPOV, SH. I., and KHASANOV, M. KH., Kazan' Branch of the All Union Scientific Research Institute of Synthetic Rubber Imeni S. V. Lebedev

"Reaction of Alkyldi(hydroxymehtyl)phosphines and Their Oxides With Isocyanates"

Leningrad, Zhurnal Obshchey Khimii, Vol 43 (105), No 5, May 73, pp 1029-1034

Abstract: Reactions of alkyldi(hydroxymethyl)phosphines and their oxides with phenyl and m-chlorophenyl isocyanates yield respective alkyldi(arylurethanomethyl)-phosphines and their oxides. It was noted that the catalytic effect of alkyldi-(hydroxymethyl)phosphines on the polymerization of phenyl isocyanate and dimerization of m-chlorophenyl isocyanate is in direct relationship to the nucleophilicity of the phosphorus atom. It has been shown that alkyldi(hydroxymethyl)phosphines are more reactive than their oxides in the reaction with isocyanates.

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UNCLASSIFIED PROCESSING DATE--27NOV70

1/2 021

TITLE--EFFECT OF THYROIDIN AND TRIIODOTHYRONINE ADMINISTERED TO RATS ON THE CHANGE OF ALLOXAN PREDIABETES INTO LATENT DIABETES AND OF LATENT

AUTHOR--ZARIPOVA, Z.KH.

COUNTRY OF INFO--USSR

SOURCE--PROBL. ENDOKRINOL. 1970, 16(3), 71-5

DATE PUBLISHED-------70

SUBJECT AREAS--BIOLOGICAL AND MEDICAL SCIENCES

TOPIC TAGS--DIABETES MELLITUS, THYROID HORMONE, PANCREAS, BLOOD CHEMISTRY, GLUCOSE, MEDICAL EXPERIMENT

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--3006/0264 STEP NO--UR/0502/70/016/003/0071/0075

CIRC ACCESSION NO--AP0134069

UNCLASSIFIED

2/2 021 UNCLASSIFIED PROCESSING DATE--27NOV70

CIRC ACCESSION NO--AP0134069

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THYROIDIN (IN INCREASING DOSES OF 10, 20, AND 60 MG-100G, ORALLY) AND TRIIODOTHYRONINE (AT 10 AND THEN 20 MUG DAILY, ORALLY) DID NOT AFFECT O CONSUMPTION OR CAUSE VISIBLE SIGNS OF THYROTOXICOSIS IS RATS, BUT AT THESE DOSES, CONVERTED ALLOXAN PREDIABETES INTO LATENT DIABETES AND LATENT DIABETES INTO A MANIFEST FROM. THYROIDIN AND TRIIODOTHYRONINE FED TO RATS WITH HEALTHY PANCREASES DID NOT CHANGE THE BLOOD SUGAR LEVEL AFTER FASTING OR GLUCOSE TOLERANCE. THE THYROID HORMONES APPARENTLY ARE ONLY SECONDARY FACTORS IN PROMOTING THE APPEARANCE OR AGGREVATING EXISTING DEFICIENCIES IN THE BETA CELLS OF THE ISLETS OF LANGERHANS. FACILITY: ENDOKRINOL. OTD. INST. AKUSH. GINEKOL, LENINGRAD, USSR.

UNCLASSIFIED

USSR

UDC: 911.3.616.927(477)

BIRKOVSKIY, Yu. Ye., ZARITSKIY, A. M.

"Epidemiological Characteristics of Typhoid in Ukrainian SSR for 1964-1969"

V sb. Materialy XV Vses. s'ezda epidemiologov, mikrobiologov i infektsionistov, Tezisy dokl. Ch. 1 (Proceedings of the 15th All Union Conference of Epidemiologists, Microbiologists and Specialists in Infectious Diseases, Reports of Theses, Part I--collection of works) Moscow, 1970, pp 278-279 (from RZh-36. Meditsinskaya geografiya No 1, Jan 71, Abstract No 1.36.249 by V. Maslovskaya)

Translation: The incidence of typhoid in the Ukrainian SSR has decreased by 41% since 1964-1969. As a result of social re-organization (communal organization of public services and amenities in cities and settlements), there are changes in the territorial morbidity distribution for typhoid -- the incidence among city dwellers constantly decreases, but remains at the same levels in agricultural localities. The decrease occurs equally through all population age groups. There has been an improvement in isolating sources of infection, chiefly bacterial agents. Infection from carrier has been established in 6.6% of typhoid cases in 1959-1963; and for 1964-1968 -- in 15.8% of cases.

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1/2 013 UNCLASSIFIED PROCESSING DATE--16OCT70

TITLE--A STUDY OF GASLESS VARIANT OF S. PARATYPHI B AND ITS EPIDEMIOLOGICAL SIGNIFICANCE -U-

AUTHOR-(04)-KRASYUK, L.S., ZARITSKIY, A.M., DEMIKHOVSKAYA, A.A., ZAKHARENKO, N.I.

COUNTRY OF INFO--USSR

SOURCE--ZHURNAL MIKROBIOLOGII, EPIDEMIOLOGII I IMMUNOBIOLOGII, 1970, NR 5, PP 69-71

DATE PUBLISHED--------70

SUBJECT AREAS--BIOLOGICAL AND MEDICAL SCIENCES

TOPIC TAGS--SALMONELLA PARATYPHI, EPIDEMIOLOGY, RIVER WATER

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--1994/0092 STEP NO--UR/0016/70/000/005/0069/0071

CIRC ACCESSION NO--AP0114488

UNCLASSIFIED

UNCLASSIFIED PROCESSING DATE--16OCT70

2/2 013

CIRC ACCESSION NO--AP0114488

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE AUTHORS STUDIED 23 STRAINS OF PARATYPHOID B MICROBES WHICH FAILED TO FORM ANY GAS ON THE MEDIA WITH CARBOHYDRATES AND MULTIATOMIC ALCOHOLS. THESE STRAINS WERE ISOLATED FROM THE PATIENTS INFECTED BY DRINKING RIVER WATER. BIOCHEMICAL ACTIVITY AND PATHOGENICITY OF THESE STRAINS FAILED TO CHANGE AFTER PASSAGE ON NUTRIENT MEDIA AND THROUGH THE ORGANISM OF MICE FOR 3 YEARS (OBSERVATION PERIOD). IN STUDYING THE NUCLEOTIDE COMPOSITION OF DNA OF GAS FORMING AND GASLESS VARIANTS OF S. PARATYPHI B THE AUTHORS FAILED TO FIND ANY STATISTICALLY SIGNIFICANT DIFFERENCES BETWEEN THE COEFFICIENTS OF THEIR SPECIFICITY AND ALSO BETWEEN THE CONTENT OF INDIVIDUAL NITROGEN BASES. APPARENTLY, THE CAUSE OF THE CHANGES OF BIOCHEMICAL PROPERTIES OF S. PARATYPHI B RESULTING FROM THE STAY OF THE MICROBE IN WATER SHOULD BE SOUGHT IN ALTERATION OF THEIR ENZYMATIC COMPOSITION. FACILITY: KIEV INSTITUT EPIDEMIOLOGII MIKROBIOLOGII I PARAZITOLOGII.

UNCLASSIFIED

USSR

UDC: 533.9...16

BASOV, N. G., ZARITSKIY, A. R., ZAKHAROV, S. D., KRYUKOV, P. G., MATVEYETS, Yu. A., SENATSKIY, Yu. V., FEDOSIMOV, A. I., CHEKALIN, S. V.

"Producing High-Power Light Pulses on Wavelengths of 1.06 and 0.53 μm and Using Them to Heat a Plasma. II. A Neodymium Glass Laser With Conversion of Emission to the Second Harmonic"

Moscow, Kvant. elektronika--sbornik (Quantum Electronics--collection of works), "Sov. radio", 1972, pp 50-55 (from RZh-Fizika, No 6, Jun 73, abstract No 6G375)

Translation: Investigations of processes of heating by means of laser sources with different wavelengths are of considerable importance for explaining mechanisms of energy transfer in laser heating of a plasma. This paper tells of the development of a high-power light source for heating experiments with emission on two wavelengths: the wavelength of a neodymium laser (1.06 μm) and its second harmonic (0.53 μm). An efficiency of greater than 50% in converting 1.06-μm emission to the second harmonic is achieved in a KDP crystal. The emission energy on the 0.53-μm wavelength is 10 j with a pulse duration of 1.0 ns. Part I, see RZhFiz, 1973, 5G239.
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USSR

UDC 543.46 + 621.378.325

BASOV, N.G., ZARITSKIY, A.R., ZAKHAROV, S.D., KROKHIN, O.N., KRYUKOV, P.G., MATVEYETS, YU.A., SENATSKIY, YU.V., FEDOSIMOV, A.I.

"Achievement Of Powerful Light Pulses At 1.06 And 0.53 Micron Wavelengths And Their Use For Plasma Heating. I. Experimental Study Of The Processes Of Radiation Reflection During Laser Heating Of Plasma At Two Wavelengths"

Kvantovaya elektronika (Quantum Electronics), Moscow, No 5(11),1972, pp 65-71

Abstract: The experimental results are presented of calorimetric, temporal, spectral and polarization measurements of radiation reflected back from plasma which is heated by nanosecond laser pulses with a wavelength of 1.06 and 0.53 micron with fluxes at targets of various materials exceeding 10^{14} watt/cm^2. The results discussed represent the first attempt to study laser heating of plasma which is produced at solid targets in the green region of the spectrum. It is found that plasma absorption of the heating light at a 0.53 micron wavelength is three times greater than at a 1.06 micron wavelength. The authors express their appreciation to V.B. Rozanov for discussion of the results of the work. 3 fig. 19 ref. Received by editors, 25 Oct 1971.

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USSR

UDC: 621.378.9:533.9.02

ZARITSKIY, A. R., ZAKHAROV, S. D., KRYUKOV, P. G., FEDOSIMOV, A. I.

"Measuring the Polarization of Back-Scattered Radiation Accompanying Laser Heating of a Plasma"

Moscow, Kvantovaya Elektronika, Sbornik Statey, No 2(8), 1972, pp 89-90

Abstract: When a plasma is heated by powerful laser emission with the use of solid targets, the laser light is strongly back-scattered. Polarization measurements are made on a wavelength of 530 nm using polaroid films; the degree of polarization of the reflected emission comes to 90-95%. Bibliography of three titles.

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USSR

UDC 621.378.325 + 543.46

BASOV, N.G., ZARITSKIY, A.R., ZAKHAROV, S.D., KRYUKOV, P.G., MATVEYETS, YU.A., SENATSKIY, YU.V., FEDOSIMOV, A.I., CHEKALIN, S.V.

"Achievement Of Powerful Light Pulses At A Wavelength Of 1.06 And 0.53 Micron And Their Use For Plasma Heating. II--Nd-Glass Laser With Conversion Of Radiation To The Second Harmonic"

Kvantovaya elektronika (Quantum Electronics), Moscow, No 6(12), 1972, pp 50-55

Abstract: The construction is described and the characteristics presented of a multistage Nd-glass laser. The laser assembly consists of the following: 1) Active elements of GLS-1 neodymium glass, 700 mm long with ends cut at a Brewsterian angle; 2) Resonator mirror; 3) Cells with clearing absorber; 4) Aperture diaphragms; 5) Selectors of longitudinal types of oscillations in oscillator; 7) Lenses; and 8) Electrooptical gate with a laser discharger. A driving oscillator assembled according to the scheme of an oscillator with self-synchronization of modes serves as the source of short light pulses in the device. The length of the oscillator resonator, formed by two mirrors with reflection coefficients of 100 and 20 percent, amounts to 6 m. Cells with a nonlinear absorber -- a solution of No. 3955 dye in nitrobenzene -- were in contact with an opaque mirror. Two selectors of axial modes in the form of

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USSR

BASOV, N.G., et al, Kvantovaya elektronika, Moscow, No 6(12), pp 50-55

inclined Fabry-Perot interferometers were used for narrowing of the generation spectrum. With the aid of these interferometers the generation spectrum was narrowed to ~0.05 Å and in so doing the pulses emitted by the oscillator were expanded to 1 nanosec. In the KDP crystal the radiation at the output is converted into a second harmonic with an efficiency greater than 50 percent. The radiation energy at a 0.53 micron wavelength amounts to 10 joule. The authors thank M.F. Stel'makh , I.S. Rez , A.I.Kovrigin , and V.F.Polov for assistance in conducting experiments with KDP crystals. 3 ill. 16 ref. Received by editors, 25 Oct 1971.

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USSR

ZAPRITSKIY, A. R., ZAKHAROV, S. D., KRYUKOV, P. G., MATVEYETS, YU. A., and FEDOSIMOV, A. I., Physics Institute imeni P. N. Lebedev, Academy of Sciences USSR

"Variations in Back-Scattered Radiation Spectrum During Laser Heating of Plasma"

Moscow, Pis'ma v Zhurnal Eksperimental'noy i Teoreticheskoy Fiziki, Vol 15, No 4, 20 Feb 72, pp 184-186

Abstract: It is known that strong back-scattering of laser light occurs during the high-power laser radiation heating of a plasma with the use of solid targets. The authors measured the spectrum of the laser light reflected by the plasma. The targets used were LiD, $(CD_2)_n$, heavy ice, Al. The radiation source was a self-mode-locking Nd laser consisting of a master oscillator and a six-stage amplifier. The plasma heating and spectral measurements were carried out on the fundamental frequency ($\lambda = 1.06$ microns), as well as on the second harmonic frequency ($\lambda = 0.53$ micron). The measurements were

USSR

ZARITSKIY, A. R., et al., Pis'ma v Zhurnal Eksperimental'noy i Teoreticheskoy Fiziki, Vol 15, No 4, 20 Feb 72, pp 184-186

made on a grating spectrograph with f = 130 cm. The back-scattered radiation spectrum was found to have a large number of equidistant lines, situated generally both in the Stokes and the anti-Stokes part of the spectrum. This is due to the presence at the line of incident radiation from weak satellites, the distance between which equals the interval between the lines of reflected light. The observed process is of a stimulated character. Its explanation may be related to the phase modulation of high-power light pulses in the plasma layer.

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ZARITSKIY, S.M.

Neutron Physics

COMBINATION OF PROGRAMS FOR CALCULATION OF REACTORS AND PROCESSING OF RESULTS OF CRITICAL EXPERIMENTS WITH THE AID OF PERTURBATION THEORY

[Article by S. M. Zaritskiy, Byulleten' Tsentra po Yadernym Dannym, Russian, No. 6, 1969, Atomizdat, pp 290-295]

The algorithms of the perturbation theory developed in [1-7] are executed in the TVK program combination, designed for the performance of various reactor calculations, and also for processing of the results of critical experiments in the form permitting systematic and effective use of these results in the checking and working out of the recommended nuclear constants.

As stated in [8, 9], such processing should include not only careful idealization of the experiment and calculation of the measured characteristics, but also computation and storage of the coefficients ("effectiveknesses") that figure in the linear approximation formulas of small perturbations

$$\frac{\Delta\alpha_x}{\alpha_x} = \sum_y \frac{\Delta\alpha_y}{\alpha_y},$$

that couple changes in the calculated characteristics α_x measured in a critical experiment, with the variations of the different constants γ that cause these changes. The storage in the computer memory of the matrices of effectivenesses α_{xy} for each critical set and for all characteristics measured on it makes it possible to check experimentally the compatibility of certain changes in nuclear data with the results of integral measurements and to check the effective and useful work on improving the recommended constants, having obtained the best matching of experimental and theoretical characteristics of all existing (or specially assembled) sets.

Only by such processing can constant feedback be achieved between the results of reactor and other integral experiments and the microconstants, and only in this case can these experiments play a role in the working out of recommended constants.

UNS: 539.125.52

-98-

UDC 621.039

USSR

ZARITSKIY, S. M., RAKITIN, I. D., and SHIKOV, S. B.

"Finite-Difference Representation of Formulas of Perturbation Theory for Calculating Reactivity"

V sb. Fiz. yadern. reaktorov (Physics of Nuclear Reactors -- Collection of Works), No 2, Moscow, Atomizdat, 1970, pp 153-167 (from RZh-Fizika, No 4, Apr 71, Abstract No 4V542)

Translation: Changes in the reactivity of fast reactors associated with a change in fuel temperature or the amount of sodium depend both on the magnitude of the perturbation and on the parameters of the critical reactor. The authors pose the problem of determining the change in reactivity with a change in these conditions. As is well-known, the reactivity is a bilinear-fractional functional of neutron flux and importance; namely, $P = L\{\sigma^b, FF^+\}/INF$, where L is the so-called operator of perturbation theory, σ^b is the perturbation cross section, INF is the importance of fission neutrons. Fluxes are determined in the multigroup diffusion approximation by solution of the finite-difference equations by the factorization method A finite-difference formula for the change in reactivity and the change in reactivity/-reactivity was obtained in the small perturbation approximation. A. G. Promokhov.

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USSR

UDC 621.039

ZARITSKIY, S. M., and TROYANOV, M. F.

"On the Accuracy Requirements of Constants for Designing Reactors"

V sb. Fiz. yadern. reaktorov (Physics of Nuclear Reactors -- Collection of Works), No 2, Moscow, Atomizdat, 1970, pp 168-182 (from RZh-Fizika, No 4, Apr 71, Abstract No 4V558)

Translation: Different methods are described for determining permissible errors in the magnitudes of nuclear physics constants to ensure a given degree of accuracy in determining the basic integral characteristics of a reactor. A method for evaluating the upper and lower limits of permissible values of errors is proposed that is more reasonable in the view of the authors. Both independent and correlating sources of errors are taken into account in the lower bound. The upper bound is determined under the assumption of the independence and random character of sources of error. The proposed method was used to evaluate the limits of permissible errors of the quantities σ_c, σ_f, and σ_f for Pu^{239} and U^{238} to ensure an accuracy in the calculation of the effective coefficient (k_{eff}) of $\pm$ 1%; and the conversion coefficient of $\pm$ 2%. The required accuracy of the magnitudes of

USSR

ZARITSKIY, S. M., and TROYANOV, M. V., Fiz. yadern. reaktorov (Physics of Nuclear Reactors -- Collection of Works), No 2, Moscow, Atomizdat, 1970, pp 168-182 (from RZh-Fizika, No 4, Apr 71, Abstract No 4V558)

the constants was too high and difficult to achieve with ordinary measurements of microconstants. Various methods are considered for easing these requirements: lowering the accuracy of the calculation of k_{eff} and the conversion coefficient, reducing the permissible errors in other nuclear constants, etc. B. A. Levin.

2/2

USSR

UDC: 681.128.3

AUZHBIKOVCIH, A. M., DMITRIYEV, S. P., ZARITSKIY, V. S., Leningrad Institute of Aviation Instrument Building

"A Two-Component Fuel Gauge"

Moscow, Otkrytiya, Izobreteniya, Promyshlennyye Obraztsy, Tovarnyye Znaki, No 8, Mar 73, Author's Certificate No 367345, Division G, filed 14 Jun 71, published 23 Jan 73, p 111

Translation: This Author's Certificate introduces a two-component fuel gauge containing a fuel-metering tank, a vaned-wheel flowmeter, a comparator, a computer device based on functional modules, and an indicator. As a distinguishing feature of the patent, measurement accuracy is improved by connecting the integrator in the computer device through an inertial link to the fuel-meter signal comparator. The output of the comparator is connected through a correcting link to one of the outputs of an adder in the computer device. The fuel meter and flowmeter are connected to the inputs of the comparator and adder respectively.

1/1

Public Health, Hygiene and Sanitation

USSR UDC 614.38:613.5

MEL'NIK, M. N., Candidate of Medical Sciences, and ZARIVAYSKAYA, Kh. A., Ministry of Health Ukrainian SSR, and Kiev Institute of General and Communal Hygiene imeni A. N. Marzeyev

"Sanitary Inspection of Private Dwellings and Public Buildings"

Moscow, Gigiyena i Sanitariya, No 12, 1970, pp 59-62

Abstract: The growth of cities and the current emphasis on efforts to reduce the incidence of noninfectious diseases are making great demands on the sanitary epidemiological stations, which are responsible, among other things, for ensuring compliance with health regulations through regular inspections, examining architectural plans, development projects, etc. The existing system has a number of shortcomings. There are no standard report forms, no specified list of buildings to be regularly inspected or indicators to be used. For example, some hospitals are judged from the amount of space allotted per bed in the wards, while others are rated by their plumbing facilities. Research institutes have issued recommendations for inspection of high-rise apartments, new heating and ventilating systems, modular constructions, etc., but to date instructions have not been prepared on methods of implementing the

USSR

MEL'NIK, M. N., and ZARIVAYSKAYA, Kh. A., Gigiyena i Sanitariya, No 12, 1970, pp 59-62

recommendations. Still another weakness is the failure of health officers to make greater use of instrumental and laboratory methods of investigation, even though the necessary devices are in adequate supply.

2/2

Acc. Nr: AP0044117 Ref. Code: UR 0660

PRIMARY SOURCE: Neyrofiziologiya, 1970, Vol 2, Nr 1 , pp 52-58

THE REGIONAL PECULIARITIES OF BACKGROUND ACTIVITY AND DIRECT RESPONSES OF THE INTACT AND NEURONALY ISOLATED CORTEX

M. M. Khananashvili, M. M. Bogoslovskiy, E. G. Zarkeshev

Institute of Experimental Medicine, Academy of Medical Sciences, USSR, Leningrad

Summary

In acute and chronic experiments background electrical activity as well as thresholds of direct cortical responses (DCR) were studied in cats with the intact or neuronal-isolated cortex of the whole hemishpere [10]. It was found out that in intact animals the suprasylvian gyrus, its medial part particularly, is characterized by a higher electrical activity and lower thresholds of direct responses as compared with the ectosylvian gyrus. These differenses do not change after neuronal isolation of the cortex from subcortical structures. Conclusion is made that the differences in neurophysiological characteristics of different gyri reflect their own peculiarities and are not mediated by subcortical nervous influences.

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2 DI

REEL/FRAME
19770598

USSR

UDC 612.825

BOGOSLOVSKIY, M. M., KhANANASHVILI, M. M., ZARKEShEV, E. G., Physiological Department imeni I. P. Pavlov, Scientific Research Institute of Experimental Medicine of the USSR Academy of Medical Sciences

"Neurophysiological Characteristic of the Isolated Structures of the Cerebral Cortex"

Moscow, Uspekhi Fiziologicheskikh Nauk, Vol 4, No 2, 1973, pp 55-100

Abstract: A survey was made of the literature on the neurophysiological characteristic of preparations of an isolated strip of the cortex and the isolated cortex. Data are presented on the background and the forced electrical activity of the preparations under conditions of macro and microleads and also biochemical and pharmaceutical studies of them. The procedure for preparing the isolated strip of cortex, the morphological characteristic of the cortex section subjected to isolation, the background electrical activity of the isolated cortical strip in acute and chronic experiments, the metabolic processes in the isolated cortical section, the electrical activity in the section in response to electrical and chemical stimulation of it and other effects, the intracortical interaction in the section, the procedure for isolating the entire cerebral cortex, its morphological nature, background electrical activity, electrical activity in response to electrical stimulation, convulsive electrical activity

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USSR

BOGOSLOVSKIY, M. M., et al., Uspekhi Fiziologicheskikh Nauk, Vol 4, No 2, 1973, pp 55-100

in the isolated cortex, the pharmacological effect on the electrical activity time relations in the isolated cortex and variations of isolating the cortex of one lobe are discussed. Sample recordings of the cortical activity under the various conditions and histograms of the first conditioning and pseudoconditioning cycles are given. In spite of the clearly pathological picture of the background electrical activity of the preparations, they permitted the study of some important properties of the cerebral cortex. Proof was obtained not only of the presence of characteristic cortical macro and cellular activity and the capacity of the cortical tissue to respond to direct stimulation, but also the peculiarities of retaining an even better exhibited regionality and electrical activity of the preparation of the completely isolated cortex of one lobe. The study of the pharmacological effects on the isolated cortex established the fact that the cortical cells relieved of two-way communications with the subcortex can form traces of stimuli applied to them. The time relation model permits the study of characteristically cortical features of the switching activity of the brain.

2/2

Acc. Nr: AP0034719 2 Ref. Code: UR 0241

PRIMARY SOURCE: Meditsinskaya Radiologiya, 1970, Vol 15, Nr 2, pp 24-29

THE USE OF STRONTIUM^{85} FOR THE DIAGNOSIS OF BONE TUMORS

N. F. Zarkevich, D. S. Mechev

Summary

Strontium^{85} was used for the diagnosis of primary tumors and metastases of the bones. Under examination were 130 patients, of this number 82 were operated upon. Radiological investigation consisted in scanning of the focus of affection in 24—96 hours, as well as in profile scanning and radiometry during the first 3—6 days. In myelomic disease, Ewing's sarcoma and reticulosarcoma the isotope accumulation in the focus was lesser than in osteogenic sarcoma, chondrosarcoma, malignized osteoblastoclastoma and metastases into the skeleton.

D.M.

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REEL/FRAME 02
19711425

USSR

UDC 621.373.826:621.396

ZARKEVICH, YE. A., MAKEYEV, O. N., SULTAN-ZADE, T. S.

"Results of Experimental Operation of a Photoreceiver for Open Communications Lines"

V sb. Ispol'z. optich. kvant. generatorov v sovrem. tekhn. i med. Ch. 2-3 (Utilization of Lasers in Modern Engineering and Medicine. Parts 2-3collection of works), Leningrad, 1971, pp 38-43 (from RZh-Radiotekhnika, No 1, 1972, Abstract No 1D652)

Translation: A photoreceiver is described. It is noted that the service life of the receiver significantly exceeds 500 years and is on the average > 1,000 hours. The basic cause for the drop in sensitivity is a decrease in the quantum efficiency of the photocathode which "fatigues." The peak of the spectral characteristic can be shifted to the shorter wave range. The current amplification coefficient of the dynode system does not change in practice. The total effect of the inductions for Moscow is 3-6 decibels. The amplification coefficient of the dynode system is incompletely used. It is limited by the limiting allowable value of the anode current of the photomultiplier (100 microamps). The application of a linear optico-mechanical automatic level control circuit is not justified. On the whole, during the operating process the photoreceiver

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USSR

ZARKEVICH, YE. A., et al., Ispol'z. optich. kvant. generatorov v sovrem. tekhn. i med. Ch. 2-3, Leningrad, 1971, pp 38-43

has recommended itself as one of the most reliable units of the linear channel of the optical communications line. There are 3 illustrations, 1 table and a 1-entry bibliography.

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USSR UDC: [621.395.741+621.3.051.025]:621.3.013.7.001.24

GAYNULLIN, R. A., ZARKHI, I. M., and KOSTENKO, N. V.

"Computing the Deleterious Effects of Single-Phase Short-Circuiting in High-Voltage Networks on Communications Cables"

Moscow, Izvestiya AN SSSR--Energetika i transport, No 1, 1972, pp 104-111

Abstract: A method is developed of computing the deleterious effects of power networks carrying 110 kV and higher, operating with transformer neutrals at dead ground, in single-phase short-circuiting. The currents in such networks, amounting to tens of kiloamperes, put a heavy stress on grounded circuits and set up magnetic fields which galvanically and inductively affect nearby communication cables. Although there are methods for computing these deleterious effects, they calculate the galvanic and inductive effects separately, then sum them up to arrive at a very approximate result which does not take into account the phase relations between the individual components. This defect is avoided in the present method, which is based on the numerical integration of a system of inhomogeneous differential equations with the boundary conditions accounted for. An example of how the computation is done on the "Minsk-22" computer is given.

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UDC 536.46:533.6

USSR

ZARKO, V. Ye., MIKHEYEV, V. F., ORLOV, S. V., KHELEVNOY, S. S., CHERTISHCHEV, V. V.

"On the Characteristics of the Ignition of Gun Powder by a Hot Gas"

V sb. Goreniye i vzryv (Combustion and Explosion -- Collection of Works), Moscow, "Nauka", 1972, pp 34-37 (from RZh-Mekhanika, No 3, Mar 73, Abstract No 3B933)

Translation: Combustion characteristics are investigated under conditions of conductive and convective heat transfer from a hot gas and the limits of applicability of the thermal theory are determined. The objects of investigation were nitroglycerine gun powder and compressed nitrocellulose. It is shown that there exists a region of condition in which ignition is determined preferentially by the parameters of the solid-phase reactions for substances with a complex reaction mechanism (in the solid and gas phases). The preponderance of gas-phase reactions is achieved under conditions of conductive heating by a rise in pressure (due to ballasting of the reaction mixture by inert gas); under conditions of convective heating it is due to intense escape of gaseous products of

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USSR

ZARKO, V. Ye., et al, Goreniye i vzryv, Moscow, "Nauka", 1972, pp 34-37

the decomposition of the high-speed gas flow. The second method of heating is less suitable for the study of nitroglycerine gunpowders and other explosives, the melting temperature (softening, liquefication) of which is lower than the ignition temperature. 5 ref. Authors' abstract.

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USSR

UDC:621.438.038.7:621.928.6

RYZHKOV, S. V., ZAROSSKIY, R. I.

"The Problem of 'Washing' the Air Entering a Marine Gas Turbine Engine with Water"

Sudostr. i Morsooruzh. Resp. Mezhved. Temat. Nauch.-Tekhn. Sb. [Shipbuilding and Marine Structures. Republic Interdepartmental Thematic Scientific and Technical Collection], 1973, No 21, pp 42-46 (Translated from Referativnyy Zhurnal Turbostroyeniye, No 11, 1973, Abstract No 11.49.136)

Translation; "Washing" of air, that is spraying of water into a stream of air containing solid particles, causes the particles to be absorbed by drops of water, and also causes a film of liquid to be formed on the surfaces of the separating elements in the air cleaner. The flow of a viscous stream containg solid particles around a sphere is studied. A solution is produced on a Mir-1 computer by the method of atoms, and the capture factor is determined from the particle trajectories found. The absorption of particles by drops of water must be looked upon as the first stage in cleaning. The second stage consists of the separating elements in the air-cleaning devices. 2 Figures; 5 Biblio. Refs.

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USSR

UDC: 51.621.391

ZAROVNYY, V. P.

"A Matrix Algorithm for Synthesizing Minimum Circuits of Linear Convolution Decoders"

Probl. peredachi inform., 1973, 9, No 1, pp 33-41 (from RZh-Kibernetika No 7, Jul 73, abstract No 7V464 by the author)

Translation: An algorithm is presented for synthesizing coding circuits with minimum storage in accordance with a code matrix or the transfer function of a linear convolution (recurrent) code. The operation of the algorithm is illustrated by examples. The results are extended to a more general class of convolution codes.

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USSR UDC: 517.948:513.88:519.4

ZARUBIN, A. G.

"The Cauchy Problem for One Class of Nonstationary Quasilinear Operator Equations"

Tr. NII mat. Voronezh. un-ta (Works of the Scientific Research Institute of Mathematics, Voronezh University), 1970, vyp. 1, pp 82-90 (from RZh-Matematika, No 5, May 71, Abstract No 5B947)

Translation: The author considers the Cauchy problem

$$u'(t)+Au(t)+Bu(t)=h(t),\quad t>0, \qquad (1)$$

$$u(0)=u_0, \qquad (2)$$

in Banach space E; where A is a linear coercive operator, B is a completely continuous (nonlinear) operator which is either non-negative or semibounded from below. The element $u_0\in\tilde{E}$, where $\tilde{E}$ is a subspace of traces of the functions $u(t)\in W_p^1(0,T;E)$.

In space $W_p^1(0,T;E)$ the author establishes the existence of at least one solution of problem (1), (2). The solvability of problem (1), (2) was previously established only in spaces of functions whose derivatives with respect to t are functions which have a non-zero order of singularity. (RZh-Mat. 1959, 7141; 1968, 2B379). Yu. Dubinskiy.

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UDC 542.61:541.6

USSR

ROZEN, A. M., NIKOLOTOVA, Z. I., KARTASHEVA, N. A., ZARUBIN, A. I., and TETERIN, E. G.

"The Relationship Between the Extraction Power of Neutral Phosphorusorganic Compounds and Their Structure. III. The Effect of Anions. Extraction of Uranyl Chloride"

Leningrad, Radiokhimiya, Vol 13, No 5, 1971, pp 700-704

Abstract: Extraction of uranyl chloride was studied in a series of neutral phosphorusorganic compounds from tributylphosphate (TBP) to trioctylphosphine oxide (TOPO) in the temperature range 0-70°C. It was determined that effective extraction constants are about 600 fold lower than those of uranyl nitrate. This may be due to the fact that higher hydration of chloride ions results in stronger forces keeping the uranyl chloride in aqueous phase; also the chloride ion is bound much tighter to the uranium than nitrate ion. A linear relationship was found between the logarithm of extraction constants and structural characteristics of the extracting agents: total electronegativity, Taft constants, Kabachnik constants, IR frequency, etc. Heat effects of the extraction were measured and calculated from the temperature function of concentration constants. The calculated effects do not correlate with

USSR

ROZEN, A. M., et al., Radiokhimiya, Vol 13, No 5, 1971, pp 700-704

structural characteristics and differ considerably from the directly measured values. Concentration constants in this case are not suitable for the calculation of heat effect.

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EQUIPMENT

Measuring, Testing, Calibrating

USSR

UDC 528.517

ZARUBIN, B. I., KORABLEV, D. P., KOTKOV, A. V., CHERNIVCHAN, T. V.

"Experience in the Operational Use of the TD-2 Photoelemeter"

Moscow, Geodeziya i Kartografiya, No 8, 1970, pp 13-19

Abstract: Series production of the TD-2 surveying and geodetic phototelemeter was started in 1969. This instrument differs from the TD-1 phototelemeter only with respect to small design improvements. Experimental specimens of the TD-type phototelemeter have been tested in operation. The results of these tests are generalized and analyzed in the article. The TD-2 phototelemeter is extremely simple in design and is reliable in operation, and can be recommended for measuring initial triangulation sides up to 10-12 km long.

USSR

UDC: 539.293.621.315.592

NEMISH, I. Yu., MALYUTENKO, V. K., ZARUBIN, D. N., Institute of Semiconductors, Academy of Sciences of the UkrSSR

"Possibilities for Using Cadmium Antimonide in Semiconductor Technology"

Kiev, Poluprovodnikovaya Tekhnika i Mikroelektronika. Resp. Mezhved. Sb., No 7, 1972, pp 66-73

Abstract: The paper cites the basic properties of cadmium antimonide, and describes the technique for synthesizing this semiconductor compound. It is shown that cadmium antimonide single crystals containing appropriate dopants can be used to good effect as detectors of infrared radiation at wavelengths down to 3000 nm, and as active elements in semiconductor thermogenerators. A comparison of the parameters of conventional semiconductor devices with their CdSb-based counterparts shows a promising future for use of this semiconductor compound in instrument making.

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Instrumentation and Equipment

2

USSR

UDC 620.171.251.1

NOVIKOV, N. V., ALEKSYUK, M. M., VOYNITSKIY, A. G., KOVAL'CHUK, B. I., MITLIKIN, M. D., and ZARUBIN, L. I., Kiev

"Specifics of Mechanical Tests of Structural Materials Over a Broad Range of Low Temperatures"

Kiev, Problemy Prochnosti, No 4, Apr 71, pp 20-26

Abstract: Methods and equipment for mechanical testing at low temperatures used at the Institute of Problems of Strength of the Academy of Sciences Ukrainian SSR are described. The equipment is used to study the temperature dependence of the mechanical properties of steels, aluminum, and titanium alloys. Equipment illustrated includes a device for maintenance of temperatures from 0 to -196°C, multiposition clamps for circular and flat specimens, the UN-30 tensile testing device, allowing loads of up to 30 tons to be applied at temperatures down to -269°K, a miniature semiconductor thermometer, the SZF-1 tensile testing machine, equipped with a chamber for testing at down to -269°C, and an electromechanical tensometer for measurement of linear and angular displacements.

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USSR

UDC 537.311.33

NEMISH, I.YU., MALYUTENKO, V.K., ZARUBIN, L.N.

"Possibility Of Using Cadmium Antimonide In Semiconductor Technology"

Poluprovodn. tekhn. i mikroelektronika. Resp. mezhved.sb. (Semiconductor Technology And Microelectronics. Republic Interdepartmental Collection), 1972, Issue 7, pp 66-73 (from RZh:Elektronika i yeye primeneniye, No 9, Sept 1972, Abstract No 9B40)

Translation: The principal physical properties of cadmium antimonide are presented and the technology of its preparation is described. It is shown that single crystals of CdSb doped with appropriate impurities can be used successfully as detectors of infrared radiation in the region of the wavelengths $\lambda \leqslant 3$ micron, and as the active elements of semiconductor thermogeneretors. A comparison of the parameters of known devices and their analogs based on CdSb show the prospects for use of the latter in construction of semiconductor devices. 19 ref. Summary.

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USSR UDC: 661.143

BOZHEVOL'NOV, V. Ye., PRISELKOVA, K. D., SOLOV'YEV, B. N., ZARUBIN, O. V., KARELIN, V. V.

"Preparation of Continuous-Action Brightness Standards"

Sb. Nauch. tr. VNII lyuminoforov i osobo chist. veshchestv (Collected Scientific Works of the All-Union Scientific Research Institute of Phosphors and Extra Pure Substances), 1971, vyp. 6, pp 95-98 (from RZh-Khimiya, No 15, Aug 72, Abstract No 15L187)

Translation: New methods are proposed for making phosphor brightness standards for the green, blue and orange regions of the spectrum in the form of polymer discs and flexible screens. These methods are simpler and more reliable than conventional methods, and are suitable for all grades of phosphors. Standards based on C^{14} are exceptionally stable (25% brightness fall-off in three years), and also are distinguished by high brightness, mechanical strength, and will withstand being kept for several days in a ferrous sulfate dosimetric solution without losing brightness. Standards made with tritium are safe from the dosimetric standpoint and have high mechanical strength and constant brightness yield (drop in brightness only 3-4% in one year).

1/1

1/2 016 UNCLASSIFIED PROCESSING DATE--16OCT70
TITLE--ELASTIC AND INELASTIC SCATTERING OF PARTICLES AND THE MODEL OF AN EXCITED CORE IN THE A EQUALS 25-35 RANGE -U-
AUTHOR-(05)-ANTROPOV, A.YE., PLAVKO, A.V., ZARUBIN, P.P., KUDRYASHOV, V.I., ORLOV, B.N.
COUNTRY OF INFO--USSR

SOURCE--IZV. AKAD. NAUK SSSR, SER. FIZ. 1970, 34(1), 153-60

DATE PUBLISHED--------70

SUBJECT AREAS--PHYSICS, NUCLEAR SCIENCE AND TECHNOLOGY

TOPIC TAGS--ELECTRON STRUCTURE, NUCLEAR MODEL, EXCITED NUCLEUS, ELASTIC SCATTERING, INELASTIC SCATTERING, SODIUM ISOTOPE, MAGNESIUM ISOTOPE, SULFUR ISOTOPE, CHLORINE ISOTOPE

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--1988/0235 STEP NO--UR/0048/70/034/001/0153/0160

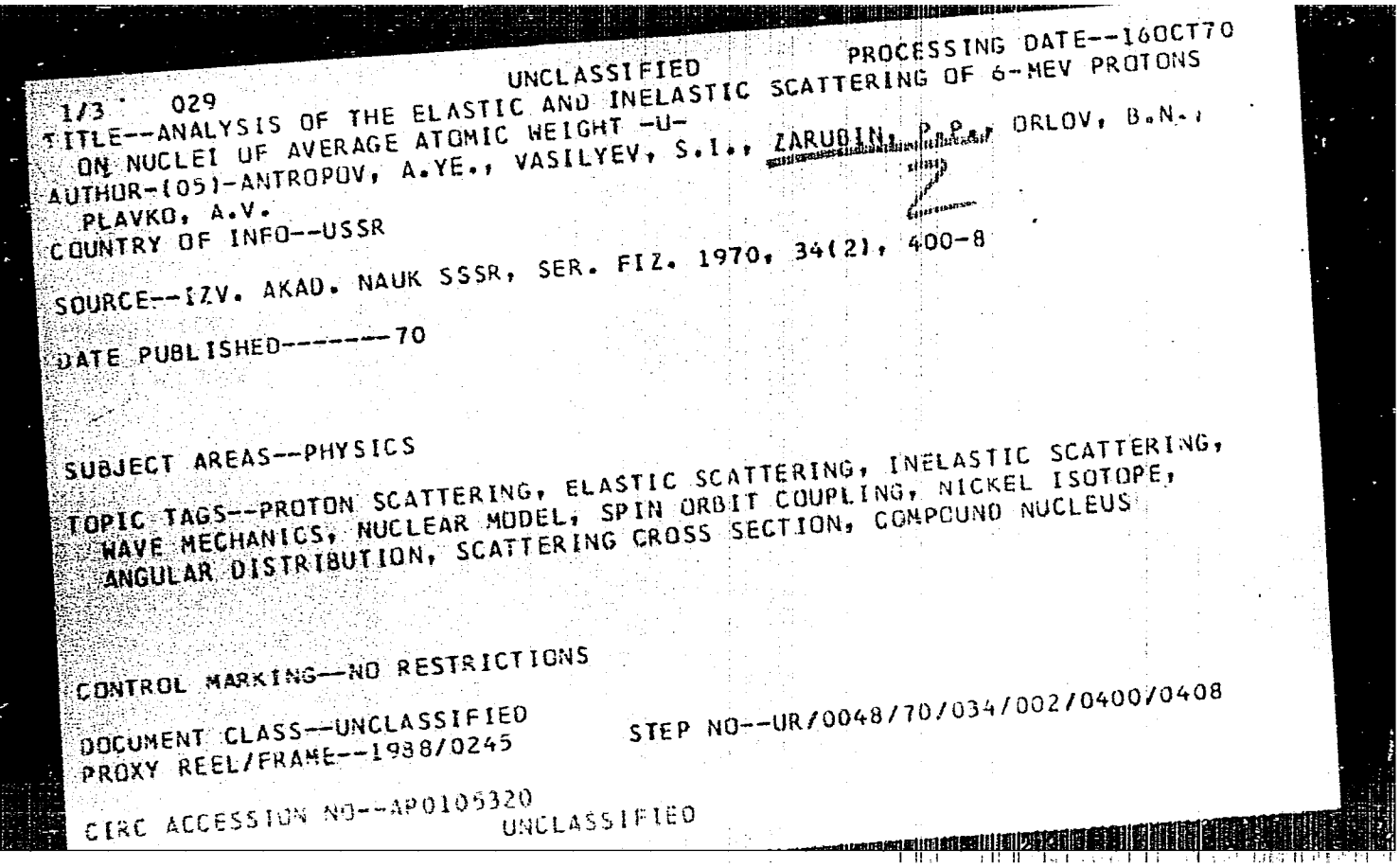
CIRC ACCESSION NO--AP0105311
UNCLASSIFIED

2/2 016 UNCLASSIFIED PROCESSING DATE--16OCT70

CIRC ACCESSION NO--AP0105311

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. DATA ARE ANALYZED ON THE ELASTIC AND INELASTIC SCATTERING OF PARTICLES WITH EXCITATION OF LOWER LEVELS OF PRIME23 NA, PRIME24 MG, PRIME25 MG, PRIME26 MG, PRIME33 S, PRIME34 S, AND PRIME35 CL. ALSO, DATA OF MEASUREMENTS PERFORMED WITH SIMILAR TO 6 MEV P ARE INCLUDED. IT IS STUDIED TO WHAT EXTENT THE EXCITED CORE MODE, THE MOST OFTEN USED MODEL, IS SUITABLE FOR THE DESCRIPTION OF THE NATURE OF LOW LEVELS OF ODD NUCLEI OCCURRING IN THE REGION OF A COMPLETE FILLING OF THE 1D-2S SHELL. AT THE CENTER OF THE SUBSHELL 1D SUBFIVEHALVES (PRIME23 NA, PRIME25 MG) WHERE THE DEFORMATION OF THE CORE OF ODD NUCLEI IS LARGE THE INTERRELATION OF N OR VACANCY WITH THE CORE IS NOT SO LARGE AS TO AFFECT THE CHARACTERISTIC FEATURES OF THE EXCITED CORE MODEL. IN ODD NUCLEI OCCURRING AT THE END OF THE SUBSHELL 1D SUBFIVEHALVES (PRIME27 AL) IN THE SUBSHELL 2S SUBONEHALF (PRIME29 SI, PRIME31 P), AND AT THE BEGINNING OF THE SUBSHELL 1D SUBTHREEHALVES (PRIME33 S, PRIME35 CL) THE INTERACTION OF THE PARTICLE OR VACANCY WITH THE CORE GOVERNS THE APPEARANCE OF THE CHARACTERISTIC FEATURES OF THE EXCITED CORE MODEL. IT OFFERS THE POSSIBILITY TO USE THE EXCITED CORE MODEL FOR THE INVESTIGATION OF THE STRUCTURE OF THE EXCITED STATES OF NUCLEI IN THIS REGION OF THE 1D-2S SHELL. FACILITY: LENINGRAD. GOS. UNIV., LENINGRAD, USSR.

UNCLASSIFIED



UNCLASSIFIED PROCESSING DATE--16OCT70

1/3 029

TITLE--ANALYSIS OF THE ELASTIC AND INELASTIC SCATTERING OF 6-MEV PROTONS ON NUCLEI OF AVERAGE ATOMIC WEIGHT -U-

AUTHOR-(05)-ANTROPOV, A.YE., VASILYEV, S.I., ZARUBIN, P.P., ORLOV, B.N., PLAVKO, A.V.

COUNTRY OF INFO--USSR

SOURCE--IZV. AKAD. NAUK SSSR, SER. FIZ. 1970, 34(2), 400-8

DATE PUBLISHED-------70

SUBJECT AREAS--PHYSICS

TOPIC TAGS--PROTON SCATTERING, ELASTIC SCATTERING, INELASTIC SCATTERING, WAVE MECHANICS, NUCLEAR MODEL, SPIN ORBIT COUPLING, NICKEL ISOTOPE, ANGULAR DISTRIBUTION, SCATTERING CROSS SECTION, COMPOUND NUCLEUS

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

STEP NO--UR/0048/70/034/002/0400/0408

PROXY REEL/FRAME--1988/0245

CIRC ACCESSION NO--AP0105320

UNCLASSIFIED

2/3 029 UNCLASSIFIED PROCESSING DATE--16OCT70

CIRC ACCESSION NO--AP0105320

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE SCATTER OF P WITH ENERGIES 3-20 MEV WAS STUDIED TO DET. LIMITS OF APPLICABILITY OF THE DISTORTED WAVE METHOD DURING THE P SCATTERING ON PRIME58 NEGATIVE64 NI NUCLEI, TO ELUCIDATE EXPTL. RESULTS ACHIEVED BY THE 6-MEV SCATTERING ON PRIME59 CO, PRIME58 NEGATIVE64 NI, PRIME63,65 CU NUCLEI BASED UPON 2 DISTORTED WAVE THEORIES AND THE HAUSSER-FESCHBACK THEORY, NEGLECTING THE EFFECT OF INTERFERENCES BETWEEN DIRECT AND COMPD. SCATTERINGS. DURING THE APPLICATION OF THE OPTICAL MODEL AND THE DISTORTED WAVE MODEL, SPIN ORBITAL INTERACTIONS WERE NEGLECTED. WHEN CONSIDERING THE VOL. ABSORPTION ONLY, A MARKED DISAGREEMENT WAS FOUND BETWEEN EXPTL. AND THEORETICAL RESULTS IN DETG. THE ELASTIC SCATTERING CROSS SECTION. THE DESIRED RESULTS WERE ACHIEVED ONLY BY SELECTING SUITABLE PARAMETERS FOR THE OPTICAL MODEL. IN PRIME58,60 NI NUCLEI, A STRONG DEPENDENCE WAS VERIFIED FOR THE ANGLE DISTRIBUTION OF SCATTERED P ON THEIR ENERGIES. THE DISTORTED WAVE MODEL ALSO PROPERLY DESCRIBES THE INELASTIC SCATTERING OF 6-MEV P ON PRIME64 NI NUCLEI BY USING PARAMETERS OF THE OPTICAL POTENTIAL OBTAINED BY THE ANAL. OF THE ELASTIC SCATTERING. THE PRESENCE OF COMPD. PROCESSES WAS VERIFIED. THIS EFFECT MUST BE TAKEN INTO ACCOUNT BY VARYING PARAMETERS OF THE OPTICAL POTENTIAL. THE SHAPE OF THE ANGLE DISTRIBUTION FOR P WITH ENERGIES OF LARGER THAN 10 MEV REMAINS ESSENTIALLY UNCHANGED; HOWEVER, THE CROSS SECTIONS ARE STRONGLY INCREASED OWING TO WINGS OF A WIDE RESONANCE MAX. WHOSE FORMATION IS CONNECTED WITH AN ACTION OF THE COMPETITIVE P AND N CHANNELS DURING THE DECAY OF THE COMPD. NUCLEUS.

UNCLASSIFIED

3/3 029 UNCLASSIFIED PROCESSING DATE--16OCT70

CIRC ACCESSION NO--AP0105320

ABSTRACT/EXTRACT--THE ANAL. OF THE INELASTIC SCATTERING BASED UPON THE HAUSSER-FESCHBACK THEORY SHOWED THAT FOR ACHIEVING DESIRED SPECTROSCOPIC DATA ONE HAS TO INCREASE THE PRECISION OF MEASUREMENT OF THE DIFFERENTIAL CROSS SECTIONS.

UNCLASSIFIED

1/2 014 UNCLASSIFIED PROCESSING DATE--16OCT70

TITLE--ELASTIC AND INELASTIC SCATTERING OF PROTONS ON MAGNESIUM-24, AND MAGNESIUM-25, AND MAGNESIUM-26 -U-

AUTHOR-(05)-ANTROPOV, A.YE., ZARUBIN, P.P., ORLOV, B.N., PLAVKO, A.V., SOROKIN, A.I.

COUNTRY OF INFO--USSR

SOURCE--NAUK, SSSR, SER. FIZ. 1970, 34(1), 106-15

DATE PUBLISHED-------70

SUBJECT AREAS--PHYSICS, NUCLEAR SCIENCE AND TECHNOLOGY

TOPIC TAGS--ELASTIC SCATTERING, INELASTIC SCATTERING, PROTON SCATTERING, MAGNESIUM ISOTOPE, ANGULAR DISTRIBUTION

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--1988/0208 STEP NO--UR/0048/70/034/001/0106/0115

CIRC ACCESSION NO--AP0105284

UNCLASSIFIED

2/2 014 UNCLASSIFIED PROCESSING DATE--16OCT70

CIRC ACCESSION NO--AP0105284

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE ANGULAR DISTRIBUTIONS OF THE ELASTIC AND INELASTIC SCATTERING OF THE P ON PRIME24 MG, PRIME25 MG AND PRIME26 MG NUCLEI WERE MEASURED FOR THE ENERGIES 5.84, 5.94, AND 6.03 MEV. ALL AVAILABLE DATA ABOUT THE SCATTERING OF P ON THESE NUCLEI WERE CLASSIFIED AND SYSTEMIZED IN ORDER TO EXPLAIN THE CONTRIBUTION OF VARIOUS MECHANISMS IN THE PROCESS OF THE ELASTIC AND INELASTIC SCATTERING. FACILITY: LENINGRAD. GOS. UNIV. LENINGRAD, USSR.

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Organ and Tissue Transplantation

USSR

ZARUBIN, Yu.

"Will There Be Spare Hearts?"

Moscow, Trud, 17 Feb 71, p 4

Abstract: A visit to the Laboratory of Polymers of the Institute of Cardiovascular Surgery, Academy of Medical Sciences USSR, is described. After tracing the history of the use of polymers in medicine and discussing the problem of developing artificial valves, the author tells of some of the achievements of the Institute of Cardiovascular Surgery and other Soviet research organizations in finding applications for polymers. These include: (i) an artificial muscle capable of changing shape and contracting in a saline solution; (ii) an artificial cornea; (iii) "biocompatible" substances that can be resorbed and eliminated by the body; e.g., plastic pins for bone fractures; (iv) an artificial heart capable of maintaining blood circulation for several days in animals.

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ZARUBIN, Yu.

"Do We Really Need Heart Transplants? Three Opinions From Famous Scientists"

Moscow, Trud, 7 Jan 71, p 3

Extract: Some remarks of Professor V. V. Kovanov, Vice President of the Academy of Medical Sciences, USSR, are reported.

"The problem of organ transplants is exceedingly interesting. In our country this problem has become a government concern. Not long ago the Institute of Tissue and Organ Transplants was organized at the initiative of Academician B. V. Petrovsky of the Ministry of Public Health USSR. The problem in its whole scope is being investigated there. Medicine is, after all, seeking the possibility of replacing every diseased human organ. The clinic has already attempted transplants of blood vessels, the cornea, kidneys, heart valves, and finally...the heart, liver, and brain.

"We studied carefully a report giving details on the case of Blaiberg, who did live for a long time after his operation. It presented an account of

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ZARUBIN, Yu., Trud, 7 Jan 71, p 3

all the treatment methods used on the case during that time.

"In addition to its scientific interest, the report had a certain positive psychological effect. The fact is that some surgeons attempt heart transplants occasionally for sheer self-advertisement. According to official statistics, 63 medical institutions in 20 countries have tried to transplant the heart.....

"At the present time, the number of centers working in this area has sharply decreased. The research is, however, more intensive and the results have therefore noticeably improved. Only a short time has passed since the initial transplant, yet the effectiveness of the treatment methods is developing rapidly. We are also accumulating experience in patient management. A group of patients is already celebrating their second anniversary (if one can use such an expression). According to records through 1 November, Professor Lauer's patient has lived 828 days; for Dr. DeBakey: one patient, 821 days, the other 813; for Shumway: one, 765; a second, 660, and a third, 557.

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ZARUBIN, Yu., Trud, 7 Jan 71, p 3

"I am convinced that if a patient can live 10 years with a kidney transplant (and such incidents are known), then he can live at least 10 years with a heart transplant."

So the medical offensive on the diseased heart has entered a second stage, the scientific assessment of accumulated experience. Research goes on.

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UDC 621.039.5.16.25

BAT', G. A., GULIMOV, V. N., ZARUBIN, YU. V., OBUKHOV, V. K., and USHAKOV, YU.V.

"Temperature Effect in the Range of 20-250° C for Several Strictly Regular Heterogeneous U-H_2O Critical Assemblies"

Moscow, Atomnaya Energiya, Vol 30, No 4, Apr 71, pp 354-358

Abstract: A good description of the function $N_{cr}(T)$ is a sufficiently reliable proof of the adequacy of the computational method and the judiciousness of the simplifications employed in it for describing the design of a reactor. Unfortunately, however, there are few experimental data on the effects of reactivity in reactors, and it is usually assumed that about a 20% accuracy in predicting the temperature effect of the reactivity is adequate. The integral nature of the critical experiments makes it possible to obtain only minimal data on each specific assembly. However, if enough such experiments are carried out, it may be possible to supplement these data on the microparameters or even perhaps to change them considerably.

The authors describe the fuel elements and the test stands and provide a table showing the composition of the fuel in weight %. They include a section on the experimental procedure and cite the results from the tests.

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BAT', G. A., et al., Atomnaya Energiya, Vol 30, No 4, Apr 71, pp 354-358

Five graphs are given which show the critical mass versus other factors. The computational and the measured results agree satisfactorily.

The article contains 1 table, 5 figures, and a bibliography of 3 titles.

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USSR

UDC 535.825:533.07

GLAZANOVA, I. D., ZARUBINA, I. L., KULAKOV, A. A., and SMIRNOV, V. A.

"Microspectrofluorometer"

Leningrad, Optiko-mekhanicheskaya promyshlennost' No 11, Nov 71, pp 30-34

Abstract: A microspectrofluorometer MLI-1 (Author Certificate No 1145322) intended for full microphotometric investigations and developed at the Leningrad Optico-Mechanical Department is described. It permits the observation and photography of microstructures, the evaluation of radiation intensity variation of separate selected structure elements, and the recording of their luminescence spectra, as well as their excitation and absorption spectra. A so-called "probe" lighting is used in the apparatus at which, with the aid of microobjectives, the images of diaphragm probes are projected in the plane of studied and reference specimens on the selected microstructure element. A functional diagram as well as the optical diagram of the MLI-1 apparatus are presented and described in detail. The apparatus spectral operational range with luminescence excitation is between 240-450 nm, in luminescence study 300-700 nm and in absorption measurements 250-700 nm. The introduction of a scanning microscope stage with displacement limits

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GLAZANOVA, I. D., et al., Optiko-mekhanicheskaya promyshlennost' No 11, Nov 71, pp 30-34

from 10 to 300 microns, makes it possible to register the variation of luminescence intensity or optical density of specimens along any selected direction in the object plane, in scanning with probes 1 to 20 microns in diameter.

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USSR UDC 581.13:582.285

ZAMUBINA, M. A., Laboratory of Physiology and Biochemistry, All Union Institute of Plant Protection, Leningrad,

"Physiology of Nutrition of the Fungus Tilletia caries (DC.) Tul."

Leningrad, Mikologiya i Fitopatologiya, No 4, 1971, pp 389-395

Abstract: Of 21 nutrient media differing in composition, the two variations in which D,l-aspartic acid and D,l-alpha-alanine with glycine served as the main nitrogen source showed the best growth of mycelium from Tilletia caries, the agent of stinking smut of wheat. Maltose, lactose, dulcite, and mannite completely suppressed growth, while dextrose and potato sucrose stimulated it. Large quantities of phosphorus, potassium, and sodium were essential in the initial growth phases, but the mineral requirements varied in the later phases. Of various vitamins tested, only thiamine and folic acid had a stimulating effect on mycelial development.

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